IDG.net

BAD E-QUALITY?

Web development presents the same quality challenges as traditional IT projects. Page 44

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Jim Champy reopens an old debate: Should the IT organization be centralized? Page 38

BROADBAND DEMAND

Providers scramble to deliver the service levels business users need to hook in branches, telecommuters. Page 64

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MICROSOFT HIT IN COURT, ON WEB

Settlement to phase out Java raises questions

BY LEE COPELAND

As Sun ended its courtroom battles over Java with a $20 million settlement from Microsoft last week, uncertainty arose about IT plans for deploying Java in Windows environments.

Sun Microsystems Inc. claimed that Microsoft Corp. had infringed on its copyright by altering Sun's Java source code. The settlement gives Microsoft the right to use the code from 1997 — the year the lawsuit was filed — in its existing tools for the next seven years. But Microsoft says it doesn't need

Java, page 77

Users feel punch when Microsoft sites sacked

BY TODD R. WEISS

When Microsoft Corp. Web sites became inaccessible to Web users for several days last week because of domain name server problems and denial-of-service attacks, the effects were far-reaching.

A technician working with Charles Henderson, a network administrator at Augustana College in Rock Island, Ill., was unable to log in to Microsoft's Knowledge Base technical support site to find answers to a niggling system problem, causing delays in resolving the issue. At the same time, some of the

Web Sites, page 16

AT A GLANCE

Redmond's DNS Woes

Configuration errors made Microsoft Web sites inaccessible for millions of users.

Sites that were unavailable for up to 22 hours at a time last week included the following:

- Main site **Microsoft.com**
- Web portal **MSN.com**
- News site **MSNBC.com**
- Car sales and info site **Carpoint.com**
- Reference site **Encarta.com**
- Travel site **Expedia.com**

GLOBALIZATION SLOW IN E-RETAIL

Few U.S. sites entering European market so far

BY CAROL SLIWA
LONDON

Several European online retailers at last week's eTail 2001 conference said they're no longer bracing for the tidal wave of U.S. companies that they expected would crash their cybershores.

Instead, they're watching some of their U.S. counterparts wrestle with the same sorts of challenges that have kept them from expanding into other countries, including language barriers, cultural nuances, shifting regulations and distribution and logistics hassles.

"Two years ago, one thought, 'The Americans are coming. We're just going to be bated,'" said Ian Cheshire, CEO of e-Kingfisher, the online arm of London-based Kingfisher PLC, a $16 billion retailer of home improvement,

Europe, page 14

BRIT ACCUSES U.S. OF SNOOPING

Europe admits it too taps corporate nets

BY DAN VERTON

The European Parliament received a detailed report last week that contains evidence of a 10-year effort by the U.S. government to use its intelligence technology to help U.S. companies win commercial contracts. The report was by a British journalist hired by the European Parliament to investigate a global electronic eavesdropping network.

The so-called Echelon network is run by an alliance among the U.S., the U.K., Canada, Australia and New Zealand. The report came as a panel of experts testified in Europe last week that the U.S. isn't the only country plucking sensitive corporate and economic data from the Internet and airwaves.

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The Korean War was over, Eisenhower was president, McCarthyism was in the news and an electronic computer was installed at General Electric's Appliance Park, a campus of factories making washing machines, refrigerators and such. The installation of the first U.S. business computer in January 1954 was a risky, bleeding-edge project, Mitch Betts reports, but it ushered in the era of business data processing. And the Louisville, Ky., site continues to be an IT innovator, from B2B e-commerce to an aggressive move toward the truly paperless office.

Story begins on page 20.

GREGORY LEVINSKY (above) is CIO at refrigerator maker GE Appliances, which was the first U.S. business to install an electronic computer.

A Brand New Day For CA.

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We started with four people, one product, and no venture capital. Twenty-four years later, CA has been involved in virtually every aspect of the software industry. From mainframes to PCs to Palm Pilots, from database to financials to network management, we've developed and sold more kinds of software for more kinds of computers than any other company.

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MENTORING

THEY MIGHT BE HEROES

It's never easy to find the time to be a mentor to another employee or manager, but IT pros who have done it say the payback to the company and to the careers of the mentor and mentoree can be 10 times the investment. Finding a mentor is also one of the best ways to advance your own career. And pairing the CIO with an employee from another department is one of the best ways to connect IT with the corporate mandate. Series on mentoring starts on page 40.

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ONLINE

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Ever get a job, only to find out you've been laid off on your first day? Ever wonder if your company has a plan? **Pimm Fox** explores the recent trials and tribulations of the dot-com world in our **E-Commerce Community.**
www.computerworld.com/ecommerce

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AT DEADLINE

Federal Spectrum Auction Ends

The Federal Communications Commission took in a total of $16.9 billion from a heavily contested auction of spectrum that began Dec. 14 and ended Friday. Bedminster, N.J.-based Verizon Wireless Inc. was the high bidder at $8.7 billion, followed by Alaska Native Wireless LLC, a Fairbanks, Alaska-based company designated as an entrepreneur by the FCC but financially backed by Redmond, Wash.-based AT&T Wireless Services Inc. Alaska Native's bid was $1.5 billion.

Eckerd Chain Dumps Longtime Outsourcer

Largo, Fla.-based Eckerd Corp. said it's dropping a long-standing deal with an IT outsourcing provider and pulling away from any near-term investments in e-commerce development. A spokesman said the drugstore chain is consolidating its IT services to cut costs. He declined to identify the outsourcer, calling the matter "a sensitive issue."

WorldCom Mum on Rumors of Layoffs

WorldCom Inc. spokesmen refused to confirm published reports Friday that the company expects to begin laying off as many as 11,000 employees beginning today. In November, WorldCom announced that it was reorganizing to "fine-tune" its operations. Cuts, if they do come, are expected to continue through February and result in a 15% reduction in the company's 77,000-employee workforce, several reports stated.

Corrections

A photo on page 52 of our Jan. 15 issue was erroneously attributed. The photographer was Manuelle Paganelli.

In an article titled "Managing the Information Store" [Technology, Jan. 22], First Union Corp. was incorrectly described as using network-attached storage. In fact, the company uses a storage-area network.

Feds Wrestle With Export Regulations

Industry groups: MTOPS rating is obsolete

BY PATRICK THIBODEAU
WASHINGTON

PLACING EXPORT controls on high-performance computers probably isn't enough stop anyone from designing a nuclear weapon. But it does have the potential to prevent a U.S. company from deploying a powerful multiprocessor system that could rapidly handle large volumes of financial transactions at an overseas business unit.

That reality led federal officials, including some at the U.S. General Accounting Office, to conclude earlier this month that export controls on high-performance computers are ineffective. But the controls remain, even though the Clinton administration significantly relaxed them.

Technology industry officials claim that the export restrictions are still a threat to overseas installations of what's becoming a common business system: a server using 32 or more processors. The chief obstacle, they assert, is the government's use of the MTOPS rating, which stands for "millions of theoretical operations per second," as a standard measurement in determining what computers can be shipped to other countries.

"MTOPS simply is not a valid parameter anymore," said Dan Hoydysh, director of trade and public policy at Blue Bell, Pa.-based Unisys Corp. and co-chairman of the Computer Coalition for Responsible Exports. The Washington-based coalition represents 10 computer makers and five IT industry trade groups.

Hoydysh and other coalition members said they want Congress to scrap MTOPS as a way of deciding whether systems should be subject to export controls. They proposed that the government instead focus on controlling distribution of true supercomputers and military-specific applications.

"What we've got to do is come to grips with the fact that the current system doesn't work," said Rhett Dawson, president of the Information Technology Industry Council, a trade association in Washington that includes a mix of IT vendors and companies such as Corning Inc. and Eastman Kodak Co. among its members.

Leveling the Playing Field

Before leaving office, the Clinton administration revised export control regulations to allow more powerful computers to be shipped to so-called Tier 3 nations such as India, Pakistan, China and Vietnam and countries in the Middle East. It also put Brazil, South Africa, Thailand and several other countries on the same level as Western Europe, Japan and Canada, which face virtually no export controls.

Officials in the departing administration said hardware performance improvements and the development of clustering and multiprocessing technologies are making the government's export control policies ineffective. The new limits — which will take effect March 20 unless Congress decides otherwise — raise processing power limits from 28,000 MTOPS to 85,000 MTOPS. But the new level is expected to be quickly outdated with the introduction of Intel Corp.'s 64-bit Itanium processors (see page 24).

A Pentium III system with 32 700-MHz chips has a performance rating of about 45,000 MTOPS, Hoydysh said. But a 32-processor Itanium machine will likely have a throughput of 190,000 to 200,000 MTOPS. That will mean that the export control limits will have to be raised again.

In a related matter, U.S. Sen. Phil Gramm (R-Texas) last week introduced a bill that would revise the Export Administration Act to exempt high-performance laptops and other mass-market technology from any controls. But that measure doesn't address the controls on advanced computers used by businesses.

Defense Agrees

In a letter to the Senate Armed Services Committee sent Jan. 18, then-Secretary of Defense William S. Cohen argued that export controls on high-performance computers are ineffective because of the ability of countries to cluster or acquire technology from outside the U.S.:

"After intensive effort, the [Department of Defense] concluded that **no alternative approach is feasible,** given these market and technology trends. In short, our ability to control the acquisition of computer hardware is already largely ineffective and will be increasingly so within a very short time frame."

Lucent to Lay Off 10,000, Close Manufacturing Plants

Firm says it tried to grow too quickly

BY JAMES COPE

Under pressure from analysts and investors, financially troubled Lucent Technologies Inc. last week outlined an aggressive restructuring program calling for 10,000 jobs to be cut and two manufacturing facilities to be closed.

The Murray Hill, N.J.-based networking equipment provider reported that it lost more than $1.02 billion from continuing operations in its first quarter ended Dec. 31. Lucent earned $1.08 billion in profits from continuing operations in the same quarter the previous year. First-quarter revenue from continuing operations fell 26% from the same period in fiscal 2000, to $5.84 billion.

The layoffs and other elements of Lucent's plan are aimed at trimming $2 billion in expenses by the end of the fourth quarter and reducing working capital by another $2 billion during the same period, said Lucent Chairman and CEO Henry Schacht in an analyst briefing last week.

A slowdown in capital spending by established telecommunications service providers, weakness in the competitive local exchange carrier market and lower software sales have all hurt Lucent's bottom line.

The company plans to sell off manufacturing operations in Oklahoma City and Columbus, Ohio, Schacht said. That could affect as many as 6,000 additional Lucent employees.

According to David Willis, an analyst at Meta Group Inc. in Stamford, Conn., Lucent has "a lot of fat to trim."

Jim Slaby, an analyst at Giga Information Group Inc. in Cambridge, Mass., cited Lucent's unrealistic sales goals as a key reason for its troubles.

"One of the things that killed them was promising their board they would meet some very ambitious growth targets," Slaby said. To fulfill the growth promise, Lucent's salespeople began discounting equipment and even agreed to offer discounts to customers on future sales, he said.

Lucent had indeed "run the business too hot," acknowledged Michelle Davidson, a Lucent spokeswoman.

"Lucent got off track when we tried to grow our company, in hindsight, faster than it was able to grow," Davidson said. "We created an organizational structure that again, in hindsight, resulted in duplication, excess costs, lack of focus and lack of visibility."

Lucent customers contacted by *Computerworld* last week either said they weren't concerned or simply elected not to comment on the restructuring.

Business-to-Business Exchanges Catch CEO Hiring Fever

Moves seen as sign of industry maturation

BY MICHAEL MEEHAN

In rapid succession, several business-to-business electronic marketplaces have named CEOs in recent weeks, a sign to many that the fledgling industry is suddenly coming of age.

Analysts call it definitive movement for an industry in which founding supplier companies have been slow to establish their exchanges as separate business entities, in part because they're fearful of being subordinate to their own creations.

Among the January CEO sweepstakes entrants are energy and petrochemical exchange Trade-Ranger Inc. in Houston and plastics marketplace Omnexus Corp. in Atlanta.

Yet business-to-business exchanges remain a hodgepodge of different management models. Many exchanges are still supplier consortiums focused on adding value for their owners, though many seasoned exchange CEOs say exchanges need to become separate entities if they are to survive.

Judith Sprieser became CEO of Chicago-based Transora Inc. in July, practically qualifying her as a sage among online marketplace chiefs. As the head of an electronic exchange for the consumer packaged-goods industry, she says she views corporate independence and internal control as two key survival factors for those that wish to survive in the business-to-business world.

TRANSORA CEO Judith Sprieser: Independence and internal control are key for B2Bs.

"When they offered me the job, I said, 'Only if it can be extremely independent,' " Sprieser said. "If you have divided interests running a company, i.e., owner/suppliers, you're asking for trouble. I didn't want to be running a trade association."

Owner/suppliers have provided the genesis for much of the business-to-business exchange industry. Chemical companies, auto manufacturers and agricultural competitors have joined together to reap the collective benefits of direct-sales markets.

In Sprieser's case, business-to-business involves more than 50 of the world's largest marketers of edible and nonedible consumer packaged-goods, such as Sara Lee Corp. and Unilever PLC. Sprieser said a consortium model might give the owner/suppliers more incentive to support the channel, but ultimately, those exchanges won't be able to react quickly enough to business opportunities, such as breaking into new industries or forming strategic partnerships.

"You do have to wonder how serious they are if they haven't put anyone permanently in charge," she said.

Many suppliers disagree. Two weeks ago, SKF USA Inc. in Kulpsville, Pa., joined with three other industrial manufacturers to form an exchange called CoLinx LLC.

Rick Farris, SKF's project manager for CoLinx, dismissed any notion that the exchange would ever function as a separate business entity.

"We have this joint venture for our collective benefit," Farris said. "This is to create business opportunities for the four partners. If you want to equate this to private vs. public, we much prefer private."

On the flip side, James Ritchie, who took the helm of Overland Park, Kan.-based Transportation.com last February, said he made it clear from the start that his company wouldn't survive if parent transportation giant Yellow Corp. micromanaged it.

"The only way we can stay nimble in the market and move at the speed we need to move is to stay independent," he said.

Ritchie noted that Transportation.com was originally set up as a public marketplace, but customers urged the company to construct private exchanges with access to the public market.

David Hope-Roth, an analyst at Gartner Group Inc. in Stamford, Conn., said many founding companies have been reluctant to cede control to the exchanges themselves.

"I think some of them worry that sometimes there's more value in the information than in the services themselves," he said.

Overall, Hope-Roth rated the progress of business-to-business exchanges, from consortium brainstorms to independent entities, as slow.

"Some companies figured this out early, but that you're just starting to see many of them name executives is an indication of how slow it is to get these things operational," he said.

New Kids On the Block

Company: Exostar Inc.
Location: Reston, Va.
Type of exchange: Aerospace and defense
Founders: BAE Systems Inc., Boeing Inc., Lockheed Martin Corp., Raytheon Co.
New CEO: Andy Pyle
Background: Chief operating officer at aerospace exchange PartsBase.com, director of e-business for the aerospace division of AlliedSignal Inc.; vice president of operations at the airframe services division of BF Goodrich Aerospace

Company: Omnexus Corp.
Location: Atlanta
Type of exchange: Plastics
Founders: BASF Corp., Bayer AG, The Dow Chemical Co., Du Pont Co., Ticona/Celanese AG
New CEO: Peter Dunning
Background: CEO of commercial real estate marketplace FacilityPro.com; senior vice president at Oracle Corp.; executive vice president at SAP America Inc.

Company: Trade-Ranger Inc.
Location: Houston
Type of exchange: Petrochemical and energy
Founders: Royal Dutch/Shell Group, BP Amoco PLC, Conoco Inc., Equilon Enterprises LLC, Mitsubishi Corp., Motiva Enterprises LLC, Occidental Petroleum Corp., Phillips Petroleum Co., Repsol YPF SA, Statoil, Tosco Corp., Total Fina Elf SA, Unocal Corp., Dow Chemical
New CEO: Claire S. Farley
Background: CEO for medical software developer Intelligent Diagnostics Inc.; president of Texaco Inc.'s North American production; president of worldwide exploration and new ventures at Texaco

Lufthansa Advances Automated Check-in

Self-service baggage part of new system

BY BOB BREWIN
FRANKFURT

In an effort to eliminate the pain involved in getting to the plane, Deutsche Lufthansa AG plans to automate the check-in process, with self-service baggage and e-ticket kiosks that the carrier says are the most advanced in the airline industry.

Joachim Frantzen, project manager for Lufthansa's self-service automation program, said that in May, the carrier will start installing check-in kiosks that will provide more functionality than the systems it started using in the late 1990s. The new kiosks will let a passenger with an e-ticket automatically check bags to a destination served by another carrier — called "interlining," in airline parlance — and include software rules that can determine baggage allowance and weights based on class of service and a passenger's frequent-flier status.

Lufthansa's goal, Frantzen added, is "one-stop" check-in, with the primary market for the new systems being "the business travelers, who want to get from the airport to the plane as quickly as possible."

Lufthansa plans to have the new kiosks operating this May in Munich. It will gradually add kiosks at other German airports throughout the year and will expand to airports in Newark, N.J., and Dulles, Va., as soon as it receives clearance from the Federal Aviation Administration.

By year's end, Lufthansa also plans to run a pilot program to automatically check passports, using systems that can read the bar codes or magnetic stripes on passports from the U.S. and many European countries. Alaska Airlines in Seattle and Northwest Airlines Inc. in Minneapolis have already deployed self-service baggage check-in, but only for domestic destinations.

Jackie Astleford, director of e-commerce at Northwest, said the carrier plans to "offer self-service kiosks with a passport reader in Japan this year," adding that Netherlands-based KLM Royal Dutch Airlines, Northwest's European alliance partner, already operates automatic passport readers at the airport in Schiphol, Holland. Northwest also plans to offer wireless check-in over iMode mobile phones in Japan in the first half of this year.

To provide baggage security, Lufthansa's automated baggage check-in system will include a scanner and scale that check the weight of the bags and the bar code on the baggage tag (applied by the passenger after it's issued by the kiosk) after the bags move down conveyor belts, making a match with check-in weight. Bags that don't make a match will be shunted aside.

"Self-service check-in is a no-brainer," said David Schehr, an analyst at Gartner Group Inc. in Stamford, Conn.

AT A GLANCE

No Waiting

Lufthansa says it plans to automate the check-in process as much as possible.

- The self-service system **automatically determines bag allowance** by class of service and frequent-flier status.
- **New kiosk installation** starts in May in Germany, with U.S. systems awaiting approval by the Federal Aviation Administration.
- The airline plans to launch a pilot program for **automatic passport checks** by year's end.

MORE THIS ISSUE
For more news about wireless technology in the airline industry, see page 8.

Alaska Air Launches Wireless Check-in

Using free software on handhelds, travelers can check in, go directly to gate

BY BOB BREWIN

ALASKA AIR GROUP Inc.'s two airlines last week kicked off a wireless check-in service for passengers who have devices such as Palm Inc. handheld computers and Web-enabled cell phones.

The service began with a limited rollout at Seattle-Tacoma International Airport Jan. 24 and is scheduled to be expanded systemwide by the end of this quarter. This makes Alaska Airlines Inc. and Horizon Air Industries Inc. the first U.S. carriers to provide wireless check-in services that can be used directly by passengers.

"We want to make it as easy as possible to get from the front door of the airport to the door of the airplane," said Alaska Airlines spokesman Jack Walsh.

Fort Worth, Texas-based American Airlines Inc. late last year launched a mobile check-in service at O'Hare Airport in Chicago, LaGuardia Airport in New York and the Dallas/Fort Worth airport, but American's system involves the airline's gate agents using handheld devices to issue bar-coded boarding passes to travelers waiting to board flights.

Officials at Seattle-based Alaska Airlines said the airline's new service will let travelers check in for flights themselves after downloading free software from the carrier's Web site. Horizon Air, a smaller regional airline that's owned by Alaska Airlines and serves 40 cities in the western U.S. and western Canada, said it also plans to implement the wireless technology.

Company officials wouldn't comment on the cost of the new system, saying it's part of a strategy aimed at improving customer service and boosting the airlines' competitiveness.

Walsh said Alaska Airlines' wireless check-in capabilities, which were developed with San Jose-based technology vendor Everypath Inc., will eliminate the need to obtain paper boarding passes.

Once a passenger checks in via a wireless device from any location, he can go directly to the appropriate gate, show a photo ID and board the plane, said Walsh. Travelers who still want to obtain a boarding pass can do so by typing in an ID number at an automated ticket kiosk, he said.

Alaska and Seattle-based Horizon already offer passengers the ability to check flight schedules and their frequent-flier information from wireless devices, and the airlines have supported automated check-in and printing of boarding passes from home and office PCs since September 1999.

Alaska Airlines' service comes two months after German airline Deutsche Lufthansa AG rolled out a wireless check-in system at 70 airports. Zurich-based Swissair AG made wireless check-in capabilities available to a limited number of its passengers in late 1999.

SAS Plans In-flight Wireless Web Access

May cost passengers $25 to $30 per month

BY BOB BREWIN

Scandinavian Airlines System (SAS) last week said it plans to start tests this fall of in-cabin, wireless LAN access to the Web and e-mail services. Analysts said the tests will mark one of the first commercial airline uses of the technology.

SAS, a Stockholm-based consortium of the national airlines of Denmark, Norway and Sweden, said it will equip a Boeing 767 used for North American flights with an 11M bit/sec., 802.11b wireless LAN connected to an onboard proxy server provided by Tenzing Communications Inc. in Seattle.

The proxy server will communicate with ground-based networks over a 2.4K bit/sec. ground-to-air satellite link. That link will be provided by Tenzing over the Inmarsat satellite system through a deal with Lockheed Martin Global Telecommunications in Bethesda, Md.

To mitigate the slow speed of the air-to-ground connection, Tenzing will cache popular Web pages on its onboard server. E-mail will be transmitted to and from the ground at intervals during the flight, with e-mail attachments limited to 500KB.

Costs and Savings

Johann Ericksson, SAS project manager for in-flight communications, estimated that the service will cost passengers $25 to $30 per month on a subscription basis. The Tenzing server will be accessible to passengers whose laptops are equipped with a wireless LAN card, which typically costs $100 or less.

Dylan Brooks, an analyst at Jupiter Media Matrix Inc. in New York, said using wireless LANs to provide passengers with Internet connections "can save airlines a lot of money" when it comes to retrofitting their planes for the addition of such services.

Air Canada in Dorval, Quebec, started a similar test with five aircraft last month using a Tenzing proxy server, with connections to the server provided through jacks on seat-back phones. And Cathay Pacific Airways Ltd. in Hong Kong has announced plans to outfit 62 of its planes with 1.5M bit/sec. wireless LANs feeding a satellite link, with its service slated to start in April.

Northwest and Continental Debut 'Interline' E-Tickets

BY MICHAEL MEHAN

In what analysts expect to be the first of many similar agreements for the coming year, Northwest Airlines Inc. and Continental Airlines Inc. last week began selling integrated electronic tickets in conjunction with computerized reservations system operator Worldspan LP.

Previously, an electronic ticket sold by one of the airlines couldn't be recognized by the other's booking and check-in systems. But Atlanta-based Worldspan built a network that will allow U.S. and Canadian travel agents to input Northwest-validated electronic tickets for trips that include legs on Continental flights.

Henry Harteveldt, an analyst at Forrester Research Inc. in Cambridge, Mass., said demand by travelers interested in taking advantage of the convenience of online tickets will eventually force more airlines into this kind of seamless information-sharing setup.

"The industry as a whole will have to embrace this," he said. "It will just take time."

How It Works

Such setups are called interline systems: They enable different airlines to share passenger information. But most air carriers still lack the ability to electronically transfer data back and forth, which has made it difficult for travelers using electronic tickets to make last-minute flight changes or to book trips that involve multiple airlines.

Setting up the system involved linking the two airlines' legacy systems with a transaction processing facility mainframe at each airline. Much like it does with its own reservations network, Worldspan created direct connections between the two reservations systems using a set of EDIFACT protocols.

Last year, IBM and the Montreal-based International Air Transport Association developed an interline system that's supposed to let multiple airlines share a single network instead of building individual connections, but no airlines have joined the network. The Opeo Travel Alliance, another trade association that's developing Internet-based communications standards, is working on a separate set of XML-based interline capabilities.

But airlines have yet to invest much money in industry-wide solutions, leaving such systems in limbo.

St. Paul, Minn.-based Northwest and Houston-based Continental, the fourth- and fifth-largest airlines in the U.S., respectively, are the first two major U.S. airlines to announce an interline connection. Last year, United Air Lines Inc. established an electronic ticketing link with Air Canada.

Interline Time Line, 2000-2001

Passengers are clamoring for airlines to share e-ticket information, but progress has been slow.

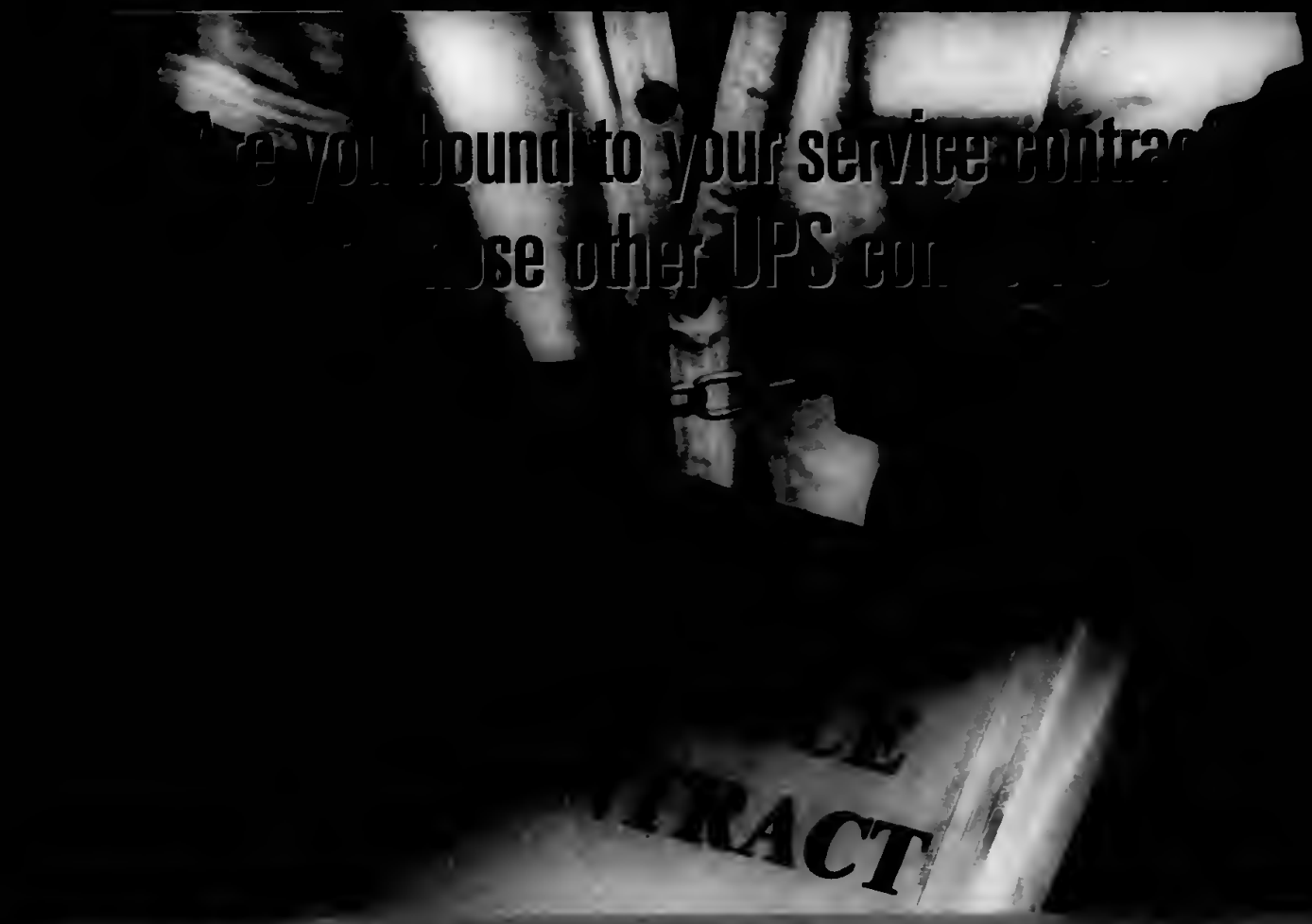
April — IBM announces it will develop an industrywide interline solution.

June — United Air Lines and Air Canada unveil an e-ticket data-sharing system.

September — Open Travel Alliance says it will create XML standards for online tickets.

October — Cheap Tickets reveals a plan to offer e-tickets using multiple carriers.

January — Northwest Airlines and Continental Airlines debut their interline connection.



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BRIEFS

GM Teams With Health Care Vendor

Detroit-based General Motors Corp. entered into a three-year alliance with Hillsborough, Ore.-based health care vendor MedicaLogic/-Medscape Inc. to encourage some 5,000 physicians who treat GM employees to use handheld devices to prescribe drugs and access digital health records. Physicians will use Medscape's digital health-record system, Logician, to access online reference material, patient records, insurance and billing data.

Ericsson to Outsource Handset Production

Sweden's L.M. Ericsson Telephone Co. said it plans to outsource all production of mobile telephone handsets in a bid to turn around its fortunes at the highly competitive consumer end of the market. Singapore-based Flextronics International Ltd. will take over Ericsson facilities in Brazil, Malaysia, Sweden, the U.K. and parts of its U.S. plant in Lynchburg, Va. Some 4,200 Ericsson employees will join Flextronics.

Cisco to Invest $200M in Softbank

Cisco Systems Inc. in San Jose announced plans to take a $200 million stake in Tokyo-based Internet investment and venture firm Softbank Corp. At the same time, Cisco said it will buy most of Softbank's stake in Cisco Systems KK, its Japanese unit, for about $275 million.

IBM to Offer BlackBerry

IBM is teaming up with Waterloo, Ontario-based Research In Motion Ltd. (RIM) to offer international wireless communication to IBM's enterprise-level customers via RIM's BlackBerry wireless pager devices. IBM said it intends to set up a team to work on integrating the BlackBerry device with e-mail and intranet back-end systems.

The team will also offer consulting, systems integration and design services.

This Could Be the Year for Privacy

Bills being introduced amid questions of potential cost, compliance, disparity

BY PATRICK THIBODEAU
WASHINGTON

THE BATTLE over privacy legislation has begun in earnest in the states and in Congress, in what may be the pivotal year for this issue.

Last week, the first major bipartisan bill regarding online privacy was introduced in Congress. But states — which have just begun calling their legislatures into session — are seeing a flurry of privacy-related bills, many of which could affect financial service companies.

What may be the biggest problem facing some businesses is the potential hodgepodge of state legislation, with varying rules and standards for protecting privacy.

Dozens of bills are being introduced in response to the Gramm-Leach-Bliley Act — a sweeping financial deregulation bill that was approved by Congress two years ago. That legislation didn't preempt the authority of states to adopt their own financial privacy rules. "The big question is, How does a state government that has been rooted in geography deal with a medium that knows no boundaries?" said Emily Hackett, state policy director at The Internet Alliance, a Washington-based trade group.

Touting Tools, Not Laws

"It is very difficult to deal with a myriad of different types of regulation on the same issue," said Kirk Herath, chief privacy officer at Nationwide Insurance Cos. The Columbus, Ohio-based company could ultimately be forced to model its privacy rules around those states with the toughest privacy bills to ensure compliance nationally, he said.

But compliance may be expensive. For instance, if a company adopts "opt-in" policies across the board for all its business units, its systems will have to be able to easily exchange data, which isn't simple for a firm with a lot of legacy systems, said Herath. "There are some systems people [who] really hope that privacy and security will probably drive a lot of systems infrastructure investment over the next 10 years," he said.

Some key lawmakers, including the powerful House Energy and Commerce Committee chairman, Rep. W.J. "Billy" Tauzin (R-La.), have predicted that online privacy legislation will be passed, perhaps in as little as eight months.

"We're gearing up and organizing to take on this issue," said Tauzin, speaking to reporters after a recent forum sponsored by Palo Alto, Calif.-based high-tech public policy group TechNet and the Arlington, Va.-based National Venture Capital Association.

But Bob Herbold, Microsoft Corp.'s executive vice president and chief operating officer, who also spoke at the high-tech forum, urged continued self-regulatory efforts. He said the industry is deploying tools, such as the Platform for Privacy Preferences Project, that customers can trust to protect their privacy.

"We think it's better that companies like Microsoft and others in this industry provide those tools as opposed to dealing with burdensome legislation," Herbold said.

At Issue

Areas of dispute in privacy legislation that's appearing both in states and in the U.S. Congress:

Opt-in vs. Opt-out: Some business groups argue that customers are less likely to agree to receive e-mail advertisements if they have to opt in. Many consumer groups want "opt-in" standards.

Access: Allowing customers to have access to data collected by them may be expensive and difficult to achieve. Privacy groups see access as a fundamental right.

Federal Preemption: Congress can override state privacy laws and limit a person's ability to sue, as it did with the Y2k liability limiting legislation. These provisions are expected to bring major battles.

53 Bills Introduced in 21 States

State legislatures are just beginning to convene, but 14 bills related to online identity theft, fraud and children's issues have already been introduced in Arizona, Massachusetts, New Jersey and Missouri, according to research sponsored by The Internet Alliance, a Washington-based trade group.

The Alliance said 53 bills dealing with financial privacy have been introduced in 21 states. And the list is expected to grow.

In Congress, Reps. Chris Cannon (R-Utah) and Anna G. Eshoo (D-Calif.) last week introduced a privacy bill that would set some baseline data protection standards for firms doing business online. Their bill is modeled after one introduced in the Senate last year and is likely to be proposed again in the new congressional session.

That measure, which is expected to be reintroduced by Sens. John McCain (R-Ariz.) and John Kerry (D-Mass.), would give Internet users the ability to limit the use and disclosure of personal information through an "opt-out" mechanism. It would also require companies to post notices about the kind of data they collect and how that information is used.

The federal bills, however, are being criticized by privacy advocates for failing to allow access to information and for relying on an opt-out instead of an opt-in model.

But Jeff Hartley, a spokesman for Cannon, said the bill will likely be changed. "We want all sides at the table in this," said Hartley, adding that all aspects of the proposal are open for discussion.

– Patrick Thibodeau

UCITA on Legislative Agenda In Four States This Year

BY MARGARET JOHNSTON
WASHINGTON

The legislatures of four states have added a controversial software licensing bill to their legislative calendars this year, indicating that the proposal, which last year passed in Maryland and Virginia, is picking up momentum.

Arizona, Oklahoma, Delaware and Texas are scheduled to take up the Uniform Computer Information Transactions Act (UCITA) in their current legislative sessions, and other states are being approached by the National Conference of Commissioners on Uniform State Laws (NCCUSL) to do the same, said Carlyle "Connie" Ring Jr., chairman of the NCCUSL's UCITA drafting committee.

Ring laid out arguments in favor of UCITA during a panel discussion last week sponsored by the Washington Legal Foundation. The panel also featured opponents of UCITA.

Forward or Backward?

Supporters of UCITA say it is a necessary improvement in commercial contract law designed to bring uniformity to software licensing contracts and a common understanding of software licenses across the U.S. But opponents say it turns back the clock on consumer protection law in favor of software vendors.

Charles Shafer, a professor at the University of Baltimore's law school, said UCITA is opposed by leading bar associations and the attorneys general of more than 20 states.

Johnston writes for the IDG News Service.

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NAPA Stores, Data Centers to Link Via VPN

Network costs less than using frame relays

BY JAMES COPE

Connecting thousands of retail stores to central data centers can cost a bundle. That spurs some firms, such as Genuine Parts Co. in Norcross, Ga., to turn away from expensive frame relay and toward less-costly virtual private networks (VPN) that use the Internet.

Officials at Genuine said last week that the company was in the process of deploying a VPN from Bethesda, Md.-based Lockheed Martin Telecommunications. By the end of the year, the VPN will connect 750 of Genuine's company-owned NAPA Auto Parts retail stores to data centers in Norcross, Ga., and Dallas.

According to Thomas Braswell, senior vice president of IT at Genuine, the network will eventually hook up an additional 5,000 NAPA franchise operations.

Efficiency Sought

Braswell said he decided to consider frame relay or a VPN to connect stores because the existing dial-up system that polled his stores twice a day for parts orders and receipts was no longer adequate.

He said he wanted a network that would link NAPA stores to his central ordering database at the company's data centers around the clock, which would enable stores to share information on stock status. Braswell said he also wanted to give NAPA stores e-mail access and applications that would allow customers to order parts over the Internet.

"Conventional wisdom would suggest using frame relay," Braswell said, because it's a proveo phone company technology that corporations have been using for years to coonect network end poiots over dedicated circuits. Unlike a VPN, which amounts to using the Internet as a wide-area oetwork, frame-relay coonectioos use a private infrastructure.

But Braswell said frame relay has a drawback: its cost. He discovered that the monthly fee to run the network over a VPN through an outsourcer would be approximately 50% less than the cost of a frame-relay system. Security and performance remained a concern, however.

Although a VPN, by definition, is an encrypted, end-to-end private tunnel through the Internet, Braswell said he wanted assurance from the five network outsourcers he was considering using that they could provide security and guarantee a level of availability and performance that he could live with.

Braswell said he made sure performance of the VPN connectioo was comparable to frame relay by setting up several stores with dual connections. He theo elected to go with Lockheed Martin as the network outsourcer.

"[Lockheed Martin uses Data Encryptioo Standard] encryption oo the VPN, which gives us the level of security we need," Braswell said.

Lotus Confirms Plans to Cut Support for Notes 4.6 in 2002

Users could find themselves in a bind

BY JENNIFER DiSABATINO

LOTUS NOTES users who haven't yet migrated to R5 would be well advised to get a move on, because Lotus Development Corp. plans to cease its support for Version 4.6 early next year.

Unfortunately, firms that have already gone through the migration said one year probably won't be enough time to get all the users at large companies onto the latest release.

At the Lotusphere conference in Orlando two weeks ago, users from large companies flocked to the case study sessions at which their peers explained the pain and value of migrating to R5, the latest version of Notes. R5's successor, RNext, is due later this year.

With RNext on the way, Lotus confirmed last week that it intends to end support for Version 4.6 early next year.

Lotus officials gave some mixed messages at Lotusphere, but the official position now is that support for Version 4.6 will end next January. That date is subject to change if customers tell Lotus they oeed more time, a spokesman said. In addition, engineering support will end January 2002, and phone service support will be extended until January 2003.

According to Lotus, half of Notes clients and 60% of Notes servers have upgraded to R5. The company expects the rest to begin migratioo in the next six months, the spokesman said.

Those who have gone through the migratioo said it's a planning-intensive process that takes years from start to finish. Messagiog administrators at the conference who are only now starting to plan their migrations are faced with an unenviable task: migrating before Lotus pulls the plug.

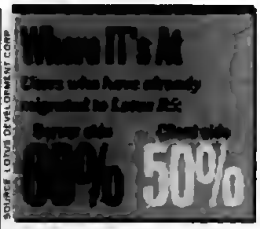
"It is clear once you have a large organization, forget it," said Frank Butstraen, a vice president at Royal Philips Electronics in Amsterdam. "But if the organization is smaller, there are different approaches to migration" that make it manageable.

Butstraen and others say they have no regrets — R5 is worth the hassle of the installation for its increased modularity and simpler directory structure.

Improvements in the latest point release, R5.5, may make it easier to install, said Mark S. Brown, a systems analyst at Mutual of Omaha Insurance Co. in Omaha.

"We did it at the R5.0 Version — we did not wait for any point releases, and it was painful. My understanding is that the 4.6 to 5.5 [migration] is a lot cleaner," he said.

Other things to determine,



SOURCE: LOTUS DEVELOPMENT CORP.

Butstraeo said, are the application conflicts between R4 and R5. "There are not so many, unless you have been doing specific things like writing your own agents," he said.

While few large companies can migrate within a year, it isn't necessarily fatal, one user said, since many firms have internal support people in place.

Everybody Loves Sametime, QuickPlace

David Price may have gotten s headache when he migrated to Notes R5, but at least he was given s pain reliever – Lotus' Sametime instant messaging software.

Although Lotus software has been traditionally known for being difficult to install and maintain, users of two of Lotus' newer collaboration tools – Sametime and QuickPlace – say the software is simple to install and requires little or no maintenance.

Price, who is senior groupware architect at ABN AMRO Holding NV, an international bank in Amsterdam, said that while migrating to R5, he was able to talk to his co-workers in Chicago when he was in Sao Paolo, Brazil.

"Sametime made it so simple," he said during a presentation at the recent Lotusphere user conference in Orlando. "I could just gush about Sametime for the rest of the show."

Users praise the security features and the ability to work within and outside the firewall, especially since Sametime is the only business application that, by license agreement, can communicate with the enormous user base of America Online Inc.'s Instant Messenger.

Frank Butstraen, s vice president at Royal Philips Electronics, said knowing when your colleagues across the globe are available is an enormous bonus that cuts international phone costs.

"The savings . . . overjustified the implementation of Sametime," Butstraen said. "Sametime, on s per-user cost [basis], you can implement for $20 per year."

Mike Leslie, an IT manager at General Motors Corp. in Detroit, was equally enthusiastic about QuickPlace, Lotus' Web-based collaborative work space software. Installation was simple, he said.

"Setting it up doesn't take much. The server-build literally takes 20 minutes," Leslie said. "All you have to know is the name of your LDAP. [QuickPlace] even presumes the port."

Both Leslie and Butstraen said they control costs and storage space by charging the user's department s nominal but noticeable fee (Leslie charges $100 per month) for each QuickPlace.

– *Jennifer DiSabatino*

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BRIEFS

Marathon to Debut Exchange Package

Boxborough, Mass.-based Marathon Technologies Corp., a vendor of high-availability kits for Windows applications, this week will release a fault-tolerant offering for Microsoft Exchange environments. Marathon's Instant Exchange, NoFail Email packages provide support for Windows 2000 or Windows NT, Microsoft Exchange and Marathon Assured Availability fault-tolerant technology in a preconfigured configuration. The company didn't release pricing information.

Corel Retrenching

Corel Corp. last week announced that it will focus on graphics tools as its main source of future revenue growth, as part of a restructuring. The plan also includes an envisioned spin-off of the company's Linux distribution business. Ottawa-based Corel also said its flagship WordPerfect suite of office software will now be targeted mainly at "untapped opportunities" within firms that are already using that package.

EMA Joins Open Group

The Electronic Messaging Association (EMA) is being rolled into The Open Group, a larger international IT standards body in Menlo Park, Calif. EMA, an Arlington, Va.-based trade organization for electronic-messaging users and vendors, has been suffering from financial and organizational problems. The EMA had been looking for a partner to bolster its flagging finances and strapped internal resources.

Yahoo, Compaq Ink Technology Pact

Santa Clara, Calif.-based Yahoo Inc. has selected Compaq Computer Corp. to be its preferred technology provider under an agreement announced by the two companies last week. In return, Compaq will advertise and market its products and services on all Yahoo-owned properties worldwide. Compaq's online store will also be a featured merchant on the Yahoo Shopping site. Financial terms of the deal weren't disclosed.

Continued from page 1

Europe

consumer electronics and general merchandise. "And now it's a question of, well, some but not all [are coming]."

Analysts noted that while Amazon.com Inc. may have staked a claim as the prime global retailer, few other U.S.-based companies have managed to build solid overseas operations or to crack the global online market to any significant degree.

Statistics from Jupiter MMXI in London, for instance, show Amazon.com among the top five retail sites in all eight countries it studied, including four in which Amazon has no international site. Yet the Seattle-based retailer's chief competition in the U.S. bookselling market, Barnesandnoble.com Inc., has chosen not to build any infrastructure outside the U.S.

"The reality of the situation is that infrastructure is going to be key to being successful globally. It's also the least sexy and most expensive," said Lindsay Parker, a senior manager at Deloitte & Touche LLP's retail and consumer business.

The Internet's global potential may have helped inflate dot-com stock valuations, said Peter Schaeffer, a managing director of retail and consumer strategy at Ernst & Young LLP in New York. But the lack of infrastructure and cash for the advertising needed to build a brand has kept retailers from living up to that promise, he said.

"It's not a whole new mythical thing. It's another channel. You've got to approach it with the [retail] fundamentals," said Jeff Roster, a senior analyst at Stamford, Conn.-based Gartner Dataquest.

"You've really got to maximize the economies of scale that you've got already, because that gives you the most chance of being profitable," said Brian Hume, president of Martec International Inc., a retail consultancy in Atlanta.

The many difficulties and vagaries inherent in the retail business have given even European retailers pause about expanding beyond their home-country borders.

Michael Gerke, managing director at PrimusTronix Europe GmbH, the online company affiliated with German retail giant Metro AG, said his company has resisted launching a U.K. Web site "because I'm afraid of losing money here."

"[U.S.-based] Outpost.com is about two and a half years ahead of us. They could be faster than we [are] in Europe. Why didn't they come already? Because the European market is segmented compared to the U.S. market, where they have one language, one product," Gerke said.

Cognizant of language barriers, Gerke said his company has expanded into only German-speaking parts of Austria and Switzerland.

The Pan-Europe Approach

Carol Dukes, CEO of Think-Natural Ltd., an online retailer of natural health and personal care products, said financiers last year pressured her to go "pan-European" with her U.K.-based business and to make her business model "culturally flexible." She said she was told that European markets are small compared with U.S. markets. Building a large company would require entering numerous countries, she said.

"It was the latest buzz thing at the time. They said, 'Well, individual European markets are relatively small compared with the U.S., so if we're going to build a big company, then we need to be able to build it in all the European countries so that we've got a big potential market," Dukes recalled.

A seasoned businesswoman, Dukes rejected pan-European expansion and built only one non-U.K.-based Web site and mail-order operation in Germany, because that country has "by far Europe's biggest natural health products market and mail-order market."

But the expansion wasn't without pain. Dukes noted that her new company achieved few economies of scale. Besides technology and senior management, "everything has to be built from the ground up in the local area."

Retailers with economies of scale in an existing global business stand a better chance at expansion, and mail-order outfits may be in the best shape, analysts said. Lands' End Inc., for instance, built catalog operations in the U.K. in 1991, in Japan in 1994 and in Germany in 1996. When the Dodgeville, Wis.-based retailer launched Web sites in those countries in November 1999, it already had the necessary distribution and call centers in place.

Lands' End reaped further benefits when it built Web sites in Ireland, France and Italy. Sam Taylor, vice president of international operations, said the French site cost 12 times less to launch than the U.K. site, and the Italian site cost 16 times less. "Over the course of 12 months, we launched in six countries," Taylor said. "We could never have launched in France and Italy and Ireland if the catalog operation wasn't there."

HMV UK Ltd. in London has gradually opened sites in countries (the U.K., Canada, Japan and Australia) where it had brick-and-mortar operations.

"It's all about timing," said Stuart Rowe, general manager of HMV Direct & E-Commerce. "Only invest what you can afford, and don't go for unknown forecasts."

Kingfisher's Cheshire said his company will expand on a country-by-country basis where it has brick-and-mortar operations, sharing the back end as much as possible. But he's treading carefully, particularly when it comes to IT work for multichannel integration.

"How can you justify on, say, 1% of your sales, 50% of your IT budget?" Cheshire said. "What you have to do is say, 'What can I absolutely function from the e-commerce point on with, and then how do I start finding money to build applications which I know will have a life?"

European Retailers Prepare for IDTV

Interactive digital television (IDTV) may not have hit the radar screens of many U.S.-based retailers, but it was a hot topic of discussion among their European counterparts at last week's aTail 2001 conference here.

Several major retailers, particularly those based in the U.K., said they're taking the medium very seriously. In fact, some already have been selling merchandise via the emerging platform.

"Today, it's nothing. But it's going to grow very fast, because in three years, there will be more TV sets capable of receiving it than there are Internet connections," said Patrick McHugh, director of e-commerce at J. Sainsbury PLC, the U.K.'s No. 2 grocer, which has already established a presence on IDTV.

IDTV isn't Web TV. There's no Internet service provider, no Web browser and no Web pages to surf. Rather, consumers typically get their digital TV service through a satellite or cable provider and can use a regular TV remote control, which also can be used to make purchases.

Backers say IDTV is easier and more natural for consumers who have grown up with television, and it's more secure for shoppers leery of using their credit cards over the Internet. In a typical scenario, they simply press a button to make a purchase; the digital TV broadcaster already has their identity and billing information.

Right now, shopping is typically done through a special channel, or digital mall, where subscribers find a list of retailers selling a limited number of items. The retailers partner with the digital provider for a fee.

McHugh said he expects that J. Sainsbury will also sell goods via ads or TV programs. For example, a consumer might press a button to order all of the ingredients for a recipe on a cooking show, he said.

Jupiter MMXI projects that 31% of all households in Western Europe will have IDTV services available to them by 2003. Olivier Beauvillain, an analyst at Jupiter MMXI, said the U.K. market is leading the way, with "the most innovative interactive services you can find in Europe and the world."

Yet Jupiter MMXI still predicts that the Internet will be the dominant platform for commerce revenue in the U.K. and Europe, with digital TV accounting for 11% of commercial revenue by 2003.

One of the downsides for retailers is that they will likely have to spend money to redevelop their content for the new proprietary platform.

Some retailers said they will take a wait-and-see approach, cognizant that Wireless Application Protocol phones failed to take off the way experts predicted a year ago.

"If I had a nickel for every time I heard about some technology that would take off in the next six to 12 months, I'd be a rich man," said Sam Taylor, vice president of international operations at Lands' End.

– Carol Silva

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Misdirected Net Traffic Is A Mystery Yet

100,000 users affected by glitch

BY JAIKUMAR VIJAYAN

SOME SECURITY analysts say it's still unclear what really happened when a technology glitch redirected Internet traffic meant for Web sites run by Yahoo Inc., Microsoft Corp. and other companies to one owned by a Bermuda-based Web hosting and domain registration firm.

On Jan. 20, an estimated 100,000 Internet users trying to access various Web sites were instead routed to a page operated by MyDomain.com, which is part of a Hamilton, Bermuda, company called Global Internet Investments Inc. The traffic eventually caused MyDomain.com's Web site to crash.

MyDomain.com claims to host more than 350,000 Internet domains. Richard Lau, the company's president, this week said the redirecting problem started with faulty entries in MyDomain.com's domain name server (DNS) table but was then compounded by misconfigured systems being run by different Internet service providers.

"Our situation reveals a massive flaw in some DNS resolution server software being used by some ISPs," Lau said, asserting that the prospect of an incorrect setting at MyDomain.com affecting other service providers on its own "goes against all fundamentals."

But while Internet service providers may indeed bear some fault, the incident also appears to have been the result of MyDomain.com taking advantage of a well-known DNS vulnerability, said Ryan Russell, an incident analyst at the SecurityFocus.com online bulletin board and security information portal in San Mateo, Calif. By putting the bulk of the blame on unnamed service providers, Russell said, MyDomain.com is "trying to . . . save face a little bit."

When a user enters a Web site address into his browser, a request for the corresponding numeric IP address is sent to a so-called authoritative name server, many of which are distributed around the world. To speed up the process, Lau said, some service providers construct DNS tables containing the IP addresses of commonly requested Web addresses or use DNS lists belonging to hosting companies such as MyDomain.com.

Compounding the Error

Because of human error, Lau said, MyDomain.com's DNS list became corrupted Jan. 20 and incorrectly redirected users to its own servers instead of the Web addresses they had requested. But the problem wouldn't have been so bad if Internet service providers had used the appropriate name servers instead of relying on data provided by MyDomain.com's DNS table, Lau claimed.

However, Russell said MyDomain.com may have had a hand in encouraging Internet service providers to do that, based on information that SecurityFocus.com received from an employee at the company. By taking advantage of the DNS vulnerability, he said, MyDomain.com appears to have actively presented itself as a sort of name server authority to users who visited the domains it hosts.

That may have contributed to the incident, Russell said, although he noted that service providers also are responsible for making sure holes such as the DNS vulnerability are closed in the first place.

In addition, it appears that some of the mapping information in MyDomain.com's DNS tables shouldn't have been there because it doesn't belong to the company, said Russ Cooper, an analyst at security consulting firm TruSecure Corp. in Reston, Va. ▶

What Went Wrong?

When a user enters a Web site address into a browser, a request for the corresponding numeric IP address is sent to a so-called authoritative name server, which maps the URL to the IP address.

Mydomain.com claims that a faulty setting in one of its domain name servers caused many such requests — including those that it wasn't "authoritative" for — to be directed to its servers instead.

The faulty setting caused the requests to be directed to a Mydomain.com Web page instead of the locations they were meant for.

Continued from page 1

Web Sites

college's 3,000 students were calling Henderson's office to complain that they couldn't access e-mail in their Hotmail accounts, which are hosted by Microsoft.

"It created some confusion," Henderson said.

The problems prompted him to spend time checking his own systems to be sure there were no internal foul-ups. "I didn't suspect it was [Microsoft], though, with their good track record," he said.

In Brockton, Mass., Bob Garber, a systems analyst at Merchandise Testing Laboratories Inc., also found the Microsoft sites to be inoperative as he and others tried to do their work.

"It wasn't really a major problem; it was more of a nuisance," Garber said.

But in Seattle, David Follis, a lead systems integrator at Datatune Inc., which does network and systems consulting, said that if the timing had been slightly different, his problems would have been significant.

Four out of five days each week, Follis and his two fellow technicians are out in the field, resolving networking and other computer problems for clients. A key tool is Microsoft's own TechNet Web site, where they can find answers to the problems they have found.

"Luckily, [it] was kind of a moderate day for us," he said of last Wednesday, when the Web site problem was being tracked down and fixed by Microsoft. But when the DNS disturbance briefly popped up the next day, causing the sites to again be unreachable, Follis became concerned.

"If this continues to happen, for the technicians and programmers who use [TechNet], it's pretty detrimental," Follis said. "That's a serious resource we rely on."

Without a reliable TechNet site, technicians will have to carry CD-ROMs containing the TechNet information, causing delays and adding to the equipment technicians will have to carry, Follis said.

The problems early in the week, according to Microsoft, occurred when the company's four DNS servers, which convert easy-to-remember Internet domain names into numeric IP addresses, became unable to make the words-to-numbers translations. The software giant blamed the problem on a Microsoft technician who incorrectly changed some network DNS settings. Later in the week, Microsoft sites were adversely affected by denial-of-service attacks aimed at the company's routers.

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But since all four of the company's DNS servers are located next to one another in the same place, with no external backups, the foul-up kept Microsoft customers from being able to access the sites until technicians figured out the problem and changed the settings back. Affected sites included Microsoft.com, Carpoint.com, MSN.com and MSNBC.com.

Adam Sohn, a Microsoft spokesman, said the company is reviewing whether it's wise to have all of the DNS servers in one place on one network. ▶

One-Man Shop Has Lesson for Giant

Sometimes, Goliath rules, and on other days, he is humbled by David.

Last week, as Microsoft suffered through two major DNS server problems that left customers unable to access Microsoft's widely used Web sites for extended periods, Carl Byington laughed quietly to himself.

Byington, owner of 510 Software Group, a one-man network administration operation in Lake Arrowhead, Calif., had read news stories describing Microsoft's DNS dilemma, which the company said was caused by a Microsoft technician who incorrectly changed some network settings.

But what struck Byington as odd was that Microsoft's system of DNS servers, which convert easy-to-remember Internet domain names into numeric IP addresses, are apparently all in the same location, right next to one another, with no external redundant backup units.

"It's called shooting yourself in the foot," he said.

Even Byington's tiny network administration firm has a more secure installation, he said, with a mail and DNS server right in his office, along with a redundant mail and DNS server located over the state line in Incline Village, Nev.

"All of Los Angeles could go black [from a power outage], and people could still find [my customers' Web sites]," he said.

If Microsoft had a similar system of redundancy, the inability of customers to reach the company's Web sites probably wouldn't have occurred, he said.

– *Todd R. Weiss*

Misdirected Net Traffic Is A Mystery Yet

100,000 users affected by glitch

BY JAIKUMAR VIJAYAN

SOME SECURITY analysts say it's still unclear what really happened when a technology glitch redirected Internet traffic meant for Web sites run by Yahoo Inc., Microsoft Corp. and other companies to one owned by a Bermuda-based Web hosting and domain registration firm.

On Jan. 20, an estimated 100,000 Internet users trying to access various Web sites were instead routed to a page operated by MyDomain.com, which is part of a Hamilton, Bermuda, company called Global Internet Investments Inc. The traffic eventually caused MyDomain.com's Web site to crash.

MyDomain.com claims to host more than 350,000 Internet domains. Richard Lau, the company's president, this week said the redirecting problem started with faulty entries in MyDomain.com's domain name server (DNS) table but was then compounded by misconfigured systems being run by different Internet service providers.

"Our situation reveals a massive flaw in some DNS resolution server software being used by some ISPs," Lau said, asserting that the prospect of an incorrect setting at MyDomain.com affecting other service providers on its own "goes against all fundamentals."

But while Internet service providers may indeed bear some fault, the incident also appears to have been the result of MyDomain.com taking advantage of a well-known DNS vulnerability, said Ryan Russell, an incident analyst at the SecurityFocus.com online bulletin board and security information portal in San Mateo, Calif. By putting the bulk of the blame on unnamed service providers, Russell said, MyDomain.com is "trying to ... save face a little bit."

When a user enters a Web site address into his browser, a request for the corresponding numeric IP address is sent to a so-called authoritative name server, many of which are distributed around the world. To speed up the process, Lau said, some service providers construct DNS tables containing the IP addresses of commonly requested Web addresses or use DNS lists belonging to hosting companies such as MyDomain.com.

Compounding the Error

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– *Todd R. Weiss*

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THE MYTHICAL FIVE NINES. 99.999%. AS CLOSE TO PERFECT

For a server operating system, the five nines are a measure of reliability that translates into just over five minutes of server downtime per year.* Of course, rumors of this 99.999% uptime usually start under ideal lab conditions. But where are these five nines when your company needs them? If you're using Microsoft® Windows® 2000 Server-based solutions, they may be closer than you think. Today Starbucks, FreeMarkets and MortgageRamp, an affiliate of GMAC Commercial Mortgage, are using Windows 2000 Server-based systems that are designed to deliver 99.999% server uptime. With system architecture improvements for higher server uptime plus fault-tolerant and redundant systems for increased availability, the Windows 2000 Server platform is helping these companies maximize

Windows 2000 Server Family

*This level of availability is dependent on many factors outside of the operating system, including other hardware and software technologies, mission-critical operational processes and professional services. © 2000 Microsoft Corporation. All rights reserved. Microsoft, Windows, and the Windows logo are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. The names of actual companies and products mentioned herein may be the trademarks of their respective owners.

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uptime and minimize network interruptions. But a server OS alone doesn't get you five nines, which is why we've teamed up with industry-leading system providers to ensure that the right combination of people, process and technology is utilized. Industry leaders such as Compaq, Hewlett-Packard, Unisys, Stratus and Motorola Computer Group can work with you to deliver solutions with up to five nines uptime with their custom-built Windows 2000 Servers shipping today. Of course, not all installations require this level of reliability, but one thing is for sure: The Windows 2000 Server family can help you get to the level of reliability you need, even five nines. To learn more about server solutions you can count on, visit **microsoft.com/windows2000/servers** Software for the Agile Business.

Microsoft

GE's Appliance Park Still an IT Innovator

Univac installation in 1954 was original bleeding-edge project

BY MITCH BETTS

THE TRUCKS rolled up to the brand-new, ultramodern factory in Louisville, Ky., one day in January 1954. Now, 47 years later, no one seems to remember the exact date. There was-o't any hoopla: No reporters or speeches or ribbon-cuttings.

But it was the very first installation of an electronic computer at a U.S. business, and it launched the era of business data processing.

Until then, computers had been used at places like the U.S. Census Bureau and military sites; this one was going to run payroll and manufacturing applications at General Electric Co.'s major appliance division in Louisville.

It took several trucks to transport the machine because the Universal Automatic Computer, or Univac, weighed 30 tons and came in many pieces. The Univac I processor was the size of a 25- by 50-ft. room — technicians actually walked inside to work on it — and had more than 5,000 vacuum tubes. GE got the eighth one off the assembly line of Remington Rand Inc., a predecessor of today's Unisys Corp.

For GE, the installatioo was directed by Roddy F. Osborn, a visionary who had the guts to buy a $1.2 millioo machine that had no programming tools and no track record in business. Today, we'd call Osborn the first corporate computer manager and champioo of the original bleeding-edge IT project.

Jumping ahead to 2001, GE Appliances is a $6 billion, global business unit that carries on that tradition of technological innovation, from business-to-business e-commerce to an aggressive move toward a truly paperless office.

A Place in History

The company has been connected to customers electronically for more than 14 years with its DirectConnect application, said Gregory Levinsky, the current CIO at GE Appliances. Plus, GE has an Ioternet ordering system called CustomerNet that serves more than 8,000 appliance dealers.

The business unit is working oo Web-enabled appliances, such as refrigerators that can read bar codes and microwave ovens that can scan frozeo entrees and automatically set the right cooking times. And in November, Levinsky's team took one of the more dramatic steps toward GE's goal of being an all-digital business: It eliminated 1,500 personal printers.

It wasn't easy to pry those printers out of end users' hands. "We had people hide them in desks when we came by and collected," Levinsky said. So the IT department just removed all of the printer drivers from the desktop PCs, which are "locked down" so that only the IT staff can install software. The first week was tough, he said, but you figure out how to "think digital" and cope without printouts.

Levinsky said he's aware of the historic significance of having the first U.S. business computer at Appliance Park, the manufacturing campus in Louisville, and proud of GE's long traditioo of innovation and technology investment.

Appliance Park was built in the early 1950s to feature the latest automated equipment and processes for making washing machines, dishwashers, refrigerators, ovens and the like. So GE also wanted the most modern accounting system for its showcase manufacturing facility.

GE contacted Chicago-based Arthur Andersen & Co.'s administrative services division io 1952 to do a feasibility study, and by June 1953, the accouoting firm recommended that GE proceed with installatioo of the Univac I "with its new 600-lines-per-minute printer." (Univac's previous printer, an electric typewriter, was limited to tapping out 10 characters per second — definitely unsuitable for business.)

Why didn't the study recommend the prototype computer from IBM, the leader in the punch card tabulation market?

"That answer is very simple. IBM did not have equipment that was available at the time that GE wanted to start. IBM was a latecomer in the [electronic computer] field," said Joseph S. Glickauf, the project leader at Arthur Andersen (see story, next page). "So there was no real problem making the decision at that particular point, if you wanted a true electronic computer," the 89-year-old Glickauf said in a telephone interview from his home in Venice, Fla.

For business users, the big attraction of the Uoivac design was the machine's "ability to scan through a reel of tape, find the correct record or set of records, perform some process in it and return the results again to tape," wrote historian Paul E. Ceruzzi in his book, *A History of Modern Computing* (MIT Press, 1998). The magoetic tapes replaced the labor-intensive process of having people shuttle punched cards from machine to machine to accomplish each of those tasks.

But programming the machine turned out to a tremendous leap into the great unknown. There were no coding tools or manuals.

Programs had to be writteo directly in machine language — ones and zeroes — plus a letter code for operations (A for add, S for subtract, for example) and an address identifying where in the memory device the operation should be performed. This required three instructions just to multiply one number by another, recalled Burton Grad, who wrote the first manufacturing control programs for GE's Univac.

It made for slow programs that were painful to modify.

Grad, in a telephone inter-

Who's On First? LEO

History books routinely describe the delivery of the Univac I to General Electric Co.'s Appliance Park in 1954 as the first installation of an electronic computer at a business.

But that "first" is only true in the U.S.

Three years earlier, a venerable British catering company – famous for its teas and cakes but with no electronics experience – had built its own computer and run the first routine office program.

The firm, J. Lyons and Co. in West London, had an intense interest in improved office-management techniques and wanted to see if the experimental computers being designed for mathematical work could be applied to the problems of business data processing.

The result was **LEO, for Lyons Electronic Office**, the first computer to run a payroll and the first to manage inventories, not to mention the first to calculate the most cost-effective blending time for fine, flavorful cups of tea.

The whole story of this user-driven innovation – the ultimate homegrown system – is told in the book, *LEO: The Incredible Story of the World's First Business Computer* (McGraw-Hill, 1998). It was written by several Lyons employees who actually worked on the project.

Even in the U.S., there were companies ahead of GE in line to get Univac computers, but the computers were never installed.

In 1948, A.C. Nielsen Co. and Prudential Insurance Co. agreed to buy Univacs from the Eckert-Mauchly Computer Corp., at the ludicrously low price of $150,000 each.

But when Remington Rand Inc. bought Eckert-Mauchly in 1950, it recognized the price was too low and eventually succeeded in canceling those contracts.

– *Mitch Betts*

view from his home office in Westport, Conn., said he spent three months in Louisville writing the material-control, factory-scheduling and inventory programs — and then the next three months in New York debugging what he'd written.

Near the end of 1955, the manufacturing programs turned out to be the first really productive applications to run on GE's Univac.

The payroll application took much longer. The programming team from GE, Arthur Andersen and Remington Rand succeeded in writing a payroll application that worked in October 1954, but performance was far from satisfactory. By one account, it wasn't until late 1956 that the payroll program was actually able to handle the workload.

"When we first started off, we thought this was a machine that could run a payroll the size of GE's at that time — 10,000 employees — in two hours," Glickauf said. "As it turned out, at the end of 40 hours [the first time it was programmed], it still hadn't completed a payroll."

Recovery From Disaster

Given the high expectations, this was an embarrassing disaster. The mortified Glickauf went to GE, hat in hand, saying, "We have to redo it. This program that we have made, it just isn't any good, period. Our firm will redo it and we won't charge you."

As Glickauf recalled, the GE executive smiled a little bit and said, "You have to appreciate that GE has problems like this all the time. We recognize that there are difficulties with innovation and development, so we wouldn't expect you to do this for nothing. We'll arrange to have you do it on a cost-plus basis. The main thing is that we don't want to lose the experience that you already have, knowing where the problems are."

The programming team worked day and night for seven months to rewrite the application — figuring out ways to simplify the program and slash the runtime — "and the second run-through didn't take anywhere near as long as that first one," Glickauf said.

Eventually, the Univac saved GE millions of dollars by tracking and scheduling materials for the assembly line, reducing excess inventory and sharply reducing the need for payroll clerks.

But why did the payroll project take so long? "The first reason is that nobody had ever done it before," Glickauf said. "So we got off on many wrong premises.

"One of the basic things that we didn't recognize was that we couldn't just drop input into the computer and let it run, because it would recognize an error and then stop. Then all the work had to be done to make the correction [and rerun the program]," Glickauf said.

Another reason was the complexity of GE's payroll, which included union wages, piecework, salaried employees and different pay scales — "a whole range of things that had never been done before except on punch cards," Grad said. "They ended up getting beaten up pretty badly for how long it took."

Indeed, several contemporaries said GE dismissed Osborn because of the problems. "Somebody had to be the goat for the fact that the first run-through had such an overrun, and unfortunately he was it," Glickauf said. "He was certainly a very enthusiastic visionary. He didn't leave of his own will, that's for sure. They brought in somebody else who was his complete opposite, a very strict, unfriendly supervisor."

At last report, 10 years ago, Osborn ran a cash-flow management consultancy in Florida, but he couldn't be located for this story.

But the legacy of Osborn and Glickauf is that they recognized that the same computers revolutionizing science and engineering could be applied to business data processing — at a time when many business executives saw no corporate future for what the media called "giant brains."

Writing in the *Harvard Business Review* in 1954, Osborn said businesses were sleeping through the computer revolution like Rip Van Winkle, but "GE's installation of a Univac may be Rip Van Business's first blink."

GE APPLIANCE PARK 1954

Remington Rand's Univac I mainframe
- 5,400 vacuum tubes
- 2.25 MHz
- 2,000 instructions per second
- 82% uptime

GE APPLIANCE PARK, 2001

Two mainframes: Bull DPS 9000/64T, Amdahl GS665E
- 7TB of data stored
- More than 400 servers
- 17M e-mail messages per year
- Payroll managed in Lakeland, Fla.
- Major e-commerce applications
- 99.7% uptime for critical apps

SOURCES: GE APPLIANCES, LOUISVILLE, KY.; *A HISTORY OF MODERN COMPUTING* BY PAUL E. CERUZZI (MIT PRESS, 1998); SMITHSONIAN/UNIVAC CORP. UNIVAC ORAL HISTORY PROJECT, MAY 1973

MOREONLINE

For more on GE's Univac and computer history, visit our Web site.
www.computerworld.com/history

Meet the Father of Computer Consulting

When **Joseph Glickauf** returned from the messy laboratory of ENIAC inventors J. Presper Eckert and John Mauchly, he felt he'd seen the future. His notes from the Philadelphia visit had the following passage:

"The demonstration we were given was impressive, if brief. But it took no genius to see that we had before us a device that would outrun, outpower and outmode every device that preceded it. I left Philadelphia with a mission. It was to convince everyone I encountered . . . that this day, I had indeed seen s vision of what would soon become s revolutionary reality."

In the late 1940s, the accounting firm Arthur Andersen & Co. had heard whispers about the development of electronic computers and sent Glickauf on an extended exploratory mission to see if these so-called giant brains could be applied to business accounting.

After the Philadelphia visit, Glickauf became one of the early computer evangelists. "The first thing I did was to convince the partners in my firm to put up the money to get started, so we could study and learn about it and become, you might say, consultants in the field," he said in a recent interview.

But what good is an evangelist without a demo? So Glickauf built a small-scale model – soon dubbed the "Glickiac" – to demonstrate the speed of electronic computing. "That little Glickiac only added 10,000 units per minute, but compare that to an adding machine," he said.

Basically, the Glickiac was an electronic counting machine – in binary, of course – with flashing lights. For the demo, Glickauf would have the audience count along with the machine and then turn up the speed, faster and faster. "The neon lights were flashing and you couldn't even see them – and pretty soon, it was far beyond the speed that anyone could possibly count. But it was a very vivid demonstration and drove the idea home that we were talking about something that was beyond anything we'd ever seen before," Glickauf said.

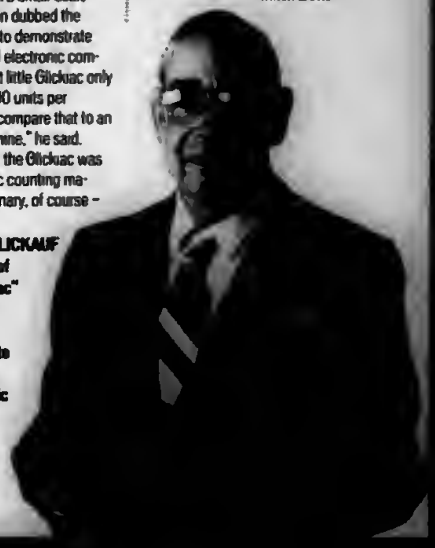
At a January 1951 meeting, the Glickiac demo was powerful enough to persuade Arthur Andersen partners to devote whatever resources were required to get into the computer consulting field before anyone else did.

In 1952, Arthur Andersen got its first engagement: s feasibility study for installing an electronic computer at General Electric's Appliance Park in Louisville, Ky. – at the bargain price of $64,000.

Eventually, Glickauf became head of Arthur Andersen's administrative services division and held that position for 12 years during a period of dramatic growth fueled by business adoption of information systems.

So, does that make Glickauf the father of computer consulting? "I would say so," he said. "I don't like to take any credit, but I had to be."

– Mitch Betts



JOSEPH GLICKAUF holds part of the "Glickiac" model that he used to demonstrate the speed of electronic computing.

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BRIEFS

Financial Results Run the Gamut

NCR CORP. reported fourth-quarter financial results that were in keeping with the reduced-expectations warning it issued earlier this month. Dayton, Ohio-based NCR said its fourth-quarter profit totaled $90 million, down from $235 million in the same period of 1999. Revenue was virtually flat at $1.7 billion, a showing that NCR attributed to a shortfall in expected sales to users in the retail industry. . . . COMPUTER ASSOCIATES INTERNATIONAL INC. said it had a net loss of $342 million in its third fiscal quarter. But Islandia, N.Y.-based CA added that it earned an operating profit of $247 million under a "pro forma/pro rata" accounting approach that excludes some special charges and takes into account a new subscription-based software licensing model that the company announced last fall. . . . EMC CORP., a Hopkinton, Mass.-based maker of storage devices, had a strong showing. The company's fourth-quarter net profit increased 49% over the same period the previous year, to $563 million on revenue of $2.6 billion. . . . Business applications vendor SAP AG announced that its fourth-quarter profit rose 16% to $343.7 million on revenue of just over $2 billion. . . . Customer relationship management software vendor SIEBEL SYSTEMS INC. in San Mateo, Calif., reported that revenue and profit both more than doubled that of the fourth quarter in 1999. . . . COMPAQ COMPUTER CORP. reported fourth-quarter financial results that hewed closely to a reduced-expectations warning issued last month and said it expects market conditions to be "difficult" during the first half of this year. Compaq said revenue in the fourth quarter totaled $11.5 billion, up 10% over the same period the year before. . . . DELL COMPUTER CORP. said its fiscal fourth quarter will be about 33% less than expected. The Round Rock, Texas-based computer maker said revenue should come in between $8.5 billion and $8.6 billion - up about 25% from 1999's fourth quarter. . . . SYBASE INC. in Emeryville, Calif., announced the best annual and quarterly earnings in its history. Total revenue for the fourth quarter increased 10% to $280.5 million, compared with $237.1 million for the fourth quarter of 1999.

Wait for Long-Delayed Itanium Continues

Intel's 64-bit chip technology is months away, but vendor enthusiasm is still high

BY JAIKUMAR VIJAYAN

INTEL CORP'S extended delay in delivering its 64-bit Itanium chip technology highlights the challenges the company faces as it attempts to move its processors up the enterprise chain, analysts said.

Systems based on the chips were at one point expected to debut in 1999. They're now slated to become available in the second half of this year.

Most corporate users will have to wait until Itanium's successor, known as McKinley, starts shipping before they can begin to see the real performance gains of the new technology, analysts said. McKinley is expected sometime in the middle of next year.

Vendor Anticipation

The delay hasn't squelched vendor enthusiasm for the chip, however. Almost every major hardware vendor, including Hewlett-Packard Co., IBM, Compaq Computer Corp. and Dell Computer Corp., has announced plans to ship Itanium systems.

Itanium is the name for Intel's next-generation 64-bit processor family. It's also the name used for the first chip in the company's new generation of processors.

Work on the technology began in June 1994, when Intel and HP announced a joint development agreement between the two corporations to design a new generation of processors that would be capable of running x86 and Unix applications equally well.

But six and a half years after the announcement, Intel has yet to commercially deliver a single chip to the market. There have been various reports in the past of problems in the manufacturing process and design glitches leading to the delays.

All that Intel will say is that such delays aren't uncommon when dealing with a processor architecture of this scope.

"At the end of the day, this stuff is incredibly hard to do," said Christine Chartier, an Intel spokeswoman. "We are talking about a brand-new architecture being built from the ground up that is going to be around for the next 15 to 20 years."

"It is not only a completely new architecture, it also requires completely new operating systems, applications and system logic," noted Dean McCarron, an analyst at Mercury Research, a Scottsdale, Ariz.-based microprocessor consultancy.

In fact, the continuing delay could have more to do with Intel's attempts to make sure all the pieces — such as operating system compilers, debuggers and software tools needed to optimize applications for Itanium — become available, McCarron said.

But getting the chip to market will be only half the battle, analysts said. Unlike other Intel chips that are targeted at mass-volume markets, Itanium is aimed at critical server applications such as hosting large databases.

As a result, the testing and validation process is going to take a lot longer to complete, leading to a relatively slow rollout of the products, said Tony Massimini, an analyst at Semico Research Corp. in Phoenix.

In the near term, "Itanium will account for a few percentage points of Intel's revenue stream — the bulk will come from Pentium 3 and Pentium 4," Massimini said. "Without those revenues, there will be no Itanium."

What Is Itanium?

Intel's first 64-bit chip:

- **Was designed by Intel and HP.**
- **Promises to run Unix and x86 software equally well.**
- **Incorporates a design called Explicitly Parallel Instruction Computing, which is expected to eventually offer better performance than RISC- or CISC-based chips.**

Lotus Strives to Appease Business Partners

Reorganization yet to have an impact

BY JENNIFER DISABATINO

Lotus Development Corp. has affirmed that a corporate reorganization was undertaken last year in part to better meet the needs of its business partners. But partner companies contacted by *Computerworld* last week said they're still waiting to see the benefits of that reorganization.

Two weeks ago at Lotusphere, the annual user and business partner conference sponsored by the software maker, Ken Bisconti was named vice president of the Lotus Worldwide Business Partner Organization. The post hadn't existed before his appointment.

According to Bisconti, Lotus reorganized itself last summer, a few months after IBM veteran Al Zollar took over as CEO and president. Zollar restructured the company around business units rather than technologies, which was intended to help business partners, Bisconti said.

For years, Lotus has had a partner program in place that has made software available to assist vendors in building value-added applications on top of Lotus products like Notes, the e-mail and collaboration tool, and Domino, the server that runs Notes. The program also puts smaller partner vendors in touch with venture capitalists to help secure funding, Bisconti said.

KEN BISCONTI: Lotus business partners want to work together on sales.

"The big partners are telling us they need us to understand their business models. Some need us to understand their capital investment needs. They want us to coordinate some of our corporate investment strategy with theirs. They want to work together on sales," Bisconti said.

Dissatisfaction Reigns

However, several business partners who spoke with *Computerworld* expressed dissatisfaction with Lotus' partnering record.

Cambridge, Mass.-based IT Factory Inc., Lotus' largest value-added reseller, said the internal structure at Lotus doesn't lend itself to supporting partners, as there's no system in place to coordinate software development and support.

According to IT Factory CEO Lars Johansen, resellers and other partner vendors are essentially left to solve software compatibility problems themselves, even if they have already committed much of their company resources to building on top of Lotus products.

What Johansen said publicly was echoed privately by other business partners, who said the lack of support is frustrating and they are looking for more.

Bisconti claimed more is coming. He cited a meeting he had at Lotusphere with a unified messaging vendor.

"We were coordinating what kind of technology they would require [and that] would be delivered in RNext," he said, referring to the successor to the current Lotus Notes version R5 that's due later this year.

Bisconti added that they also discussed "what things would facilitate their working on an R5 installation."

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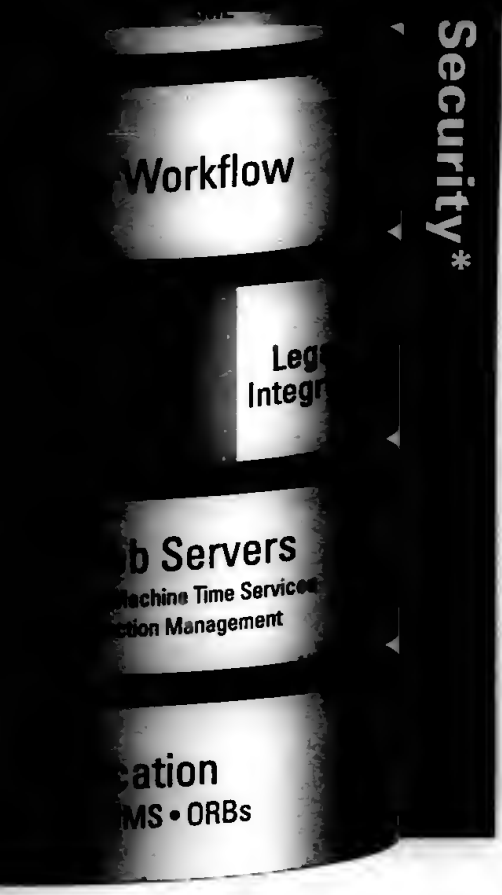

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ebizQ: The Insider's Guide

Building en e-business is e complex undertaking. The key to long-term success is en egile e-business infrestructure that can quickly end easily accommodete chenges in business processes and technology. Creeting such an infrastructure demands the integration of diverse technologies, epplications and business semantics.

While many vendors claim to heve e "comprehensive, end-to-end solution," in reality most offer functionelity in specific ereas. e-Business infrastructures will commonly be multi-vendor solutions. The challenge is to match your individuel business requirements to specific vendor offerings. This, however, is no easy task when all the vendors and their products sound elike.

ebizQ hes developed en e-Business Integration Road Map to guide companies in distinguishing among the vendor offerings. The road map is based on stringent criteria in the following technology ereas:

- ***Application Communication***
- ***Application Servers and Web Servers***
- ***Enterprise Application Integration (EAI)***
- ***Process Management and Workflow***
- ***B2B Integration***
- ***e-Business Services (application functionality)***
- ***Systems Management***

Application Communication

Integretion solutions are based on en application communicetion technology to ellow disperete epplications developed in different languages and pletforms to communicate. These include messaging systems, Java Messege Service (JMS), messege queuing, publish-and-subscribe technologies end object request brokers (ORBs).

Most EAI solutions ere based on asynchronous messaging. However, synchronous communication solutions ere important for reel-time performance requirements. Companies should choose e primery messaging technology and then deviate only for specific requirements, such es performence or security. Limiting the number of eccepted technologies reduces the system's complexity, maintenence and operating costs.

Application Servers and Web Servers

Applicetion servers end Web servers are important for a number of reasons. First, they provide e-business functionelity that mey not reside in existing systems but must integrete with them. Second, they provide Web connectivity for extending existing applications to e-business solutions. Third, they provide essential run-time services for e-business epplications including, load belancing, failover, trensaction management, object management, session menegement end connection pooling. Fourth, they enable component integretion, which means components written in different tools can communicete if they all heve the same stenderd interfece, such es COM, EJB or CORBA. Fifth, some vendors offer integration capabilities, including applicetion adepters for integreting with peckaged epplications, data synchronizetion ecross multiple date sourcas end distributed trensection manegement.

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TO E-BUSINESS INTEGRATION

Enterprise Application Integration

An EAI solution integrates different applications through a common API. It includes data translation and transformation, rules- and content-based routing, and application connectors or adapters to packaged applications such as SAP and PeopleSoft. Some EAI vendors have more support for legacy integration than others do. Many legacy integration tools require custom programming and are responsible for most of the cost of implementation. Companies should evaluate performance and adaptability requirements before choosing a legacy integration solution.

Process Management and Workflow

Process automation can optimize business processes to reduce cycles times and create competitive advantage. Process automation technology enables companies to design and automate business processes through graphical business models. Process management provides the capability to monitor and control business processes that involve multiple applications and business units. Workflow solutions include notification and task boxes with user-friendly interfaces for solutions that require human interaction. When the end-to-end business process is not contained in a single application, and control of information across application and business boundaries sits outside all the applications, process automation and workflow solutions provide the overall management solution.

B2B Integration

Business-to Business integration allows data and transactions to be integrated across organizational boundaries. The technologies enabling e-business integration include partner management, process management, support for business-to-business standards such as XML and EDI, and business-to-business security. Some e-business integration solutions include EAI technology for integration with the back end; some have adapters to specific applications; and some offer only business-to-business integration and require EAI solutions for back-end integration.

While process management and automation provide a competitive advantage within an organization, they are an absolute requirement for business-to-business integration. The interaction process, including acknowledging receipt of messages and transactions and managing multiple security levels, must be clearly defined for all the independent business entities.

e-Business Services

e-Business services provide the business functionality that sits on top of the integration platform and utilizes the services of the e-business infrastructure. e-Business services are defined by the type of solutions they enable, for example, e-commerce, exchanges, e-CRM (customer relationship management), supply chains, portals and distributed e-services. In the not-too-distant future, evolving integration technology will enable dynamic discovery and invocation of distributed e-business services, making it possible for any business to become a virtual global e-business.

Systems Management

Many integration solutions have only rudimentary management capabilities. Systems management tools reduce the time and effort required for operational support of integration solutions.

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Navigating throu

The ebizQ e-Business Integration Road Map has been designed for business managers and IT professionals who are responsible for implementing e-business solutions. It explains the types of technologies that make up e-business infrastructures and segments vendor offerings by technical capabilities.

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Companies must create a robust and flexible enterprise infrastructure that meets today's needs as well as tomorrow's challenges. If the focus is only on tactical solutions, the result will be an unmanaged mix of technologies that can inhibit change and stifle long-term competitive advantage. e-Business integration technology enables e-business success.

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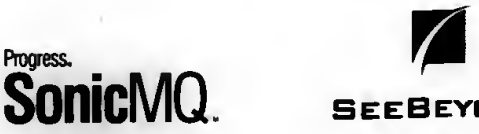

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AGENDA

9-12:30 MORNING SESSION

- **Introduction and Welcome,** *Vicki J. Brown, Chief Operating Officer*
- **Business Takes the Leap: Old and New Worlds Collide,** *John Gantz, Chief Research Officer*
- **ASPs, ISPs, XSPs ...Where Will It All Lead?**
  Clare Gillan, Group Vice President, New Business Initiatives
- **Hardware: Get Ready for the Appliance-Centric Era**
  Crawford Del Prete, Senior Vice President, Hardware Research
- **Unwiring the Wired Market**
  Pim Bilderbeek, Vice President, eBusiness and Networking Research, IDC EMEA

Session A 1:45 - 2:25	Session B 2:35 - 3:15	Session C 3:25 - 4:05
[illegible] Opportunity Assessment Barry Parr	Building the eBusiness Web: Boiling Down to Business in Bali Rick Villars	Regional eBusiness Perspectives Philippe de Mauflin
The New Edge of Mobile Information Randy Giusto	The Connected Home of Tomorrow Danielle Levitas	The Networking Edge in Small Business Ray Boggs
Beyond Transactions: Content, Analytics, and Collaboration Drive eBusiness Henry Morris	The Status but Beautiful 30s Beauty Issue Chris Christiansen	Value Chain Integration: The Network of Serious Business Steve Hendrick
IP Communications and New World Voice Mark Walker	Next-Generation Broadband Networks Lee Doyle	Data Centers for eBusiness Lucinda Borovick
Assembling the Components—Services for Building and Managing the eSupply Chain Christopher Holloway	Application Infrastructure Provisioning—The Engine of eBusiness David Tapper	Selling to "W"—Services for Helping Companies the Mobile Meredith Whalen
The 60s Century: Positioning to Win in This New Era Dalton Goldfarb	Server Infrastructure for the eBusiness Economy Vernon Turner	Architecting Information Access for Tomorrow's Enterprise John McArthur

4:15-5:30 CLOSING SESSION

- **San Francisco Only: The New New Economy or the Real Beginning of the E-Age**
  John Seely Brown, Chief Scientist of Xerox Corporation - Director, Xerox Palo Alto Research Center
- **Boston Only: The Role [illegible] Technologies in a Knowledge-Based Economy**
  Lester [illegible] Economics

Travelocity Confirms Web Site Exposed Data

BY MICHAEL MEEHAN

Just as Travelocity.com Inc. was basking in the glow of its announcement that it expects to be "at or close to profitability" by this year's secood quarter, the online travel agency confirmed that a glitch exposed the names and e-mail addresses of about 44,000 people.

Officials at Fort Worth, Texas-based Travelocity last week confirmed that an encrypted file containing information about users who had entered contests run by the company was inadvertently posted oo its live Web site.

Jim Marsicano, executive vice president of sales and service at Travelocity, said the problem originated last month when a server was moved from San Francisco to the company's main data center in Tulsa, Okla. The machine "had been allocated for in-house work and file storage [but] was inadvertently put into a production environmeot," he said.

When the server went online, Marsicano added, a random link was created that made available a directory for the spreadsheet-based file, which hadn't been scrubbed by IT workers at Travelocity.

No credit card numbers or transaction data were included in the file, according to Marsicano. But he said the glitcb was "horribly embarrassing and not the way we should be running our business."

Bad Timing

It also came at an inopportune time, just days after Travelocity's Jan. 17 announcement that its projected timetable for becoming profitable would be pusbed up six months — a development that led analysts to tout the company as one of the Ioternet's top success stories.

Analysts said the privacy problem probably won't slow down Travelocity's drive toward profitability, but they added that the data exposure was a serious gaffe for the most heavily used online travel site.

Travelocity "should probably do an audit of their safety and security procedures," said Henry Harteveldt, an analyst at Forrester Researcb Inc. in Cambridge, Mass. He added that rival Expedia Inc. in Bellevue, Wash., took that step last summer when it went through an outside security audit and issued a pledge of complete confidentiality to its users.

Expedia officials said they got no satisfaction from their competitor's misfortuoe. "It gives people pause in general, and we're trying to build customer confidence as an industry," said Tony Goochar, Expedia's chief privacy officer.

David Provost, an analyst at Gomez Advisors Inc. in Waltham, Mass., said be seconds tbe notion that "some sort of third-party validatioo of their practices" might be in order for Travelocity.

Marsicano said it's too early to determine what steps could have helped avoid the data exposure.

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MARK HALL

In Your Court

AFTER PAYING a $20 million settlement to Sun Microsystems, doling out millions more in legal fees and walking away with nothing last week after a more than three-year courtroom battle over Java, you'd think Microsoft would be concerned — humbled even — by what many are declaring a victory for Sun. Hardly.

Company executives, lawyers and spokesmen were all sanguine about the agreement. In their minds, the legal settlement is just another contract permitting them to use the same Java Development Kit (JDK) 1.1.4 binaries they ship now. What's $20 million? A standard licensing fee. Why all the fuss? Microsoft wonders.

Mark Hall is *Computerworld*'s West Coast editor. You can contact him at mark_hall@computerworld.com.

Indeed, the deal effectively requires Sun to maintain 100% compatibility with 1.1.4 while Microsoft ships Windows and Internet Explorer, which is to say for a long, long time.

Of course, Sun's only on Version 1.1.8 of the JDK today, and backward compatibility might not be a problem. Still, as long as Windows is the biggest source of Internet clients, or until 2008, 1.1.4 will be a burden Sun must bear.

In the meantime, Microsoft is free to build completely new capabilities in its emerging .Net products, which naturally will work great in Windows, though maybe not so great elsewhere. Sun's Java team can add similar or even better capabilities to its products. But if Sun fails to make sure the products are 1.1.4-compatible, it ignores the biggest Internet client base on the planet today.

Alternatively, Sun can outmarket, outdistribute and outspend Microsoft to make sure all Windows users have the latest JDK binaries. Fat chance.

Also, Sun must compete for third-party and corporate IT developers to choose between .Net and Java. Among third-party developers, Microsoft is way ahead. In the corporate world, I'd say the influence is about even. But it's no coincidence that Microsoft announced this month that the biggest marketing program in its history will target large IT organizations. I'm betting most of the millions will be spent to persuade you to go with .Net.

So, the proverbial ball has bounced from the law courts into yours. Senior IT executives will decide whether Sun's established Java technology is the best development environment for their Internet initiatives. Or not.

Today, with no real .Net alternative, Java wins. But if Microsoft ever gives you something to compare against it, you'll have the chance to be the final judge and jury.

PIMM FOX

Fight the Urge to Cut Net Spending

TEMPTATION ISLAND is a new reality television show in which good-looking men and women are tempted to cheat on their beloveds. It's a great premise, but it's lousy TV because it pits internal wrangling against external immobility. Watch Tracy think about Brad. See Carew cry over Alex.

It's like putting together this year's IT budget.

From the outside it looks dull: no new money, no new projects. But inside are turmoil and temptations to postpone and cut IT initiatives.

We're back to having to justify every project and every expense. In some companies, the situation is so bad, you just might have to cut back on using the copy machine.

Pimm Fox is *Computerworld*'s West Coast bureau chief. Contact him at pimm_fox@computerworld.com.

And with the word *Internet* leaving a bad taste in investors' mouths, IT is shelving Internet projects.

That's a shame. The move to the Net has proved profound for consumers and businesses, and it rivals the move from mainframe computing to client/server architectures a decade ago.

The Internet offers wider access to technology and can distribute that technology beyond company walls. This changes business models because you can now automate many more things. That's one of the pillars of e-business.

So this is the wrong time to pull this structure down. Instead of cutting e-business budgets, smart business leaders are pushing ahead.

Jack Welch, the legendary CEO of General Electric, was recently quoted as saying, "In this company, we are driving the hell out of IT. We think it's the lifeblood of the company and digitization is the most important thing we have undertaken." Welch added that this is the time to widen the IT gap between you and competitors.

In fact, for companies that were slow to fall in love with e-business, now is a wonderful time to move quickly. Competitors may be rethinking their e-business commitments, and there's more sophisticated software available. In addition, a slowdown in Internet consulting means your call to a consultant will be returned promptly, and you might even wring better terms.

So fight the budget-cutting attempts. Demonstrate how spending on IT can yield new markets and opportunities.

And don't skimp on training. Creating e-business opportunities by connecting back-end systems to front-end Internet operations requires new skills. Don't let your people down by shut-

ting the door oo cootinuing educatioo.

Finally, resist the temptatioo to delay e-business implemeotations. The short-term benefit of cutting costs will be insignificant compared with what could happen if you fall behind your competitors. ◗

DAVID MOSCHELLA

IT Anxiety of 2001 Has Its Precedents

NOT SINCE the early 1990s has the IT industry begun a new year under such a barrage of bad news: the wipeout of vast sums of paper wealth, the rising dot-com body count, sagging vendor earnings, a severe drought in venture funding and a 1970s-style energy crisis in the very epicenter of the global technology industry. If you believe in symbols, it's hard to ignore the fact that it's tbe man from oil country, not the "inventor of the Internet," who has moved into the White House.

Perhaps the only bright side is that we no longer have to listen to naive and haughty references to the emergence of a "New Economy," nor to vapid assertions about why the Web "changes everytbing." It wasn't long ago that anyone wbo dared dispute such dogma was dismissed as some poor lost soul who obviously "just doesn't get it." For those of us who resented the implicit arrogance of these once-commoo assertions, there's a certain sense of justice in seeing our industry get its comeuppance.

More important, this industrywide humbling is the simplest way to understand what has happened. The world has lived through many such economic bubbles, and although much has been written about their similarities (most notably the indispensable *Extraordinary Popular Delusions and the Madness of Crowds*, by Charles Mackay), it's their differences that I find most instructive. Consider the following:

DAVID MOSCHELLA is vice president of knowledge strategy at MeansBusiness Inc., a Boston-based Internet start-up that's building a database of ideas. Contact him at dmoschella@earthlink.net.

■ The oft-cited Dutch tulip bulb craze of the 1630s had its roots in individual vanity and status, as the bizarre idea that a man of leisure was somehow incomplete without a sufficiently elegant tulip bulb collection took hold. Being founded upon such obvious flimsiness, the whole notion completely collapsed and never returned.

■ The great speculative international trading bubbles of the early 1700s were founded largely on the thrill of exotica, as Europeans suddenly convinced themselves that the New World would prove an easy source of unfathomable wealth. In the end, this basic belief proved more right than wrong. The wealth was there; it just didn't come easily or quickly.

■ The U.S. stock market bubble in the late 1920s stemmed from an almost admirable societal optimism. New technologies such as automobiles, airplanes and radio, as well as all manner of electrical appliances and machinery, promised a better, richer life for all Americans. Unfortunately, it wasn't until the 1950s that these promises began to be fulfilled.

■ The Japanese bubble of the late 1980s was ultimately based on an overconfidence that spilled over into arrogance. Investors came to believe that Japanese companies were destined to conquer just about all major world markets, and therefore it only made sense that Tokyo's land prices should make New York seem like Montana.

Obviously, all of these bubbles share a common tale of greed and speculative frenzy, followed by collapse and prolonged decline. But otherwise, they are far from alike. Personal vanity, exotica, excessive optimism and arrogance have each taken the lead at various times. The dot-com collapse adds yet another twist.

Historians will likely view the Internet bubble for what it was: an overzealous belief that the new world would quickly supplaot the old and that Net-based organizations would run circles around their brick-and-mortar rivals. Maybe they eventually will.

But as we saw with the New World in the 18th century and the woodrous inventioos of the 1920s, even when such predictions ultimately prove true, it can take decades for the real rewards to be reaped. ◗

READERS' LETTERS

E-Lit: The Way to Go?

HAS BROWN University's Robert Scholes ever *read* an e-book ["Barnes & Noble Takes Popular Literature Digital," News, Jan. 8]? None of the e-books I've seen have been interactive; they've beeo on-screeo books for reading, and I've gotten as much, if not more, pleasure reading the titles on oy e-book as I get from reading a paper book, to the point where I am hoping to obtain digital copies of every book on my shelf.

Rob Freundlich
Senior software engineer
Hudson, Mass.

WOULD-BE authors proclaiming the Internet the great publishing democratizer overlook a simple fact: A paperback novel, by its very existence, implies a certain level of literary legitimacy. With the exception of vanity presses, a printed book represents an editor who scoured the manuscript, a publisher who decided the work was worth the costs and an author who publicized his work on every talk-show and book signing he could get to. Perhaps more to the point, several years ago I spent most of my summer vacation under a beach umbrella reading Stephen King's *The Stand*. Enjoyable as the book was, I can't imagine enduring the discomfort and inconvenience of trying to read that huge work on a computer screen.

E.S. Pollinett
Cameron Lawrence Press
Charlotte, N.C.
edwin@clpress.com

Apple May Be Only a Niche Player, But It Excels at What It Does

I AGREE WITH Mark Hall that Apple is being ignored as a competitive system for business use because it decided to ignore business ["It's No Mac World," News Opinion, Jan. 8]. Steve Jobs missed the mark witb business, and Apple will forever pay the price. But Hall needs to check his research regarding the implication that a Mac server running OS X can't run Web applications.

Although Apple has blown the business market, even a marketing dunce like me can see that Jobs is building computer toasters with the iMac, iBook and Cube: Plug it in, turn it on and forget it.

Apple will forever be a niche player, but it does a great job playing to its niche.

Eric Henthorne
Metro Printing Inc.
Eden Prairie, Minn.

AT MACWORLD, there were many more OS X sessions than Linux stuff; perhaps Hall was looking at a rough draft of the program guide.

Mark Jeffries
San Francisco

AS AN IT manager with many Macs and an impending J.D. Edwards go-live date, I'd like to mention that though there is no native J.D. Edwards fat client for the Macintosh, there is a nice cross-platform implementation of Microsoft Office as well as excellent e-mail client software and several functional Web browsers.

As I see it, this is all we need. Why? Because Citrix MetaFrame exists. Citrix isn't cheap, but in my opinion, it has already paid for itself because we don't need to replace our Macs with new Windows machines.

However, if Microsoft decides not to make a Terminal Server client for the Mac, I may be singing a different tune when Citrix's contract with Microsoft expires in a couple of years.

We're prepared to deal with ao all-Windows organization, but we're not looking forward to it.

Cory Rau
IT manager
New York
cory_rau@mac.com

Stick to the IT News

THE ARTICLE "IT Under Siege: Conflict Poses Extreme Challenges" [News, Jan. 8] was disturbing. I didn't know *Computerworld* had become a political newspaper, printing articles that, at least on the surface, show anti-Semitism. Stick to your magazine's title and avoid one-sided politics.

Roe and Ralph Schlesinger
Monroe, N.Y.

COMPUTERWORLD should stick to IT reporting and leave its obvious pro-Muslim/anti-Jewish bias to others.

David N. Spiegel
IT specialist
Toronto
dspiegelcan@hotmail.com

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

DAN GILLMOR

The Indelible Legacy of William Hewlett

WILLIAM HEWLETT'S death this month marked the end of more than one era in Silicon Valley. If we're all lucky, his passing will remind today's technology leaders of what we've all lost in the past few years.

Hewlett and his longtime partner, David Packard, who died in 1996, were among the valley's genuine founding fathers. They created a corporate giant but never forgot about either the essential humanity of the people who worked for their company or the needs of the larger community.

DAN GILLMOR is technology columnist at the *San Jose Mercury News*. Contact him at dgillmor@sjmercury.com.

Packard was better known. Hewlett was probably the better engineer. But the two built a remarkable company, with a management style that Hewlett later said was his proudest achievement.

Hewlett-Packard, the company, had values. It followed principles that companies around the world have adopted, in lip service if nothing else. The values stemmed from the founders, who believed in things like honesty and caring for neighbors.

It came under the umbrella of the "HP Way," and at its core was the notion that employees and communities mattered. The HP Way combined respect, hard work, community spirit and basic humanity. Companies around the nation say they subscribe to these ideals, but few have made them a core mission.

The bursting of the dot-com bubble has caused great pain, but it's ultimately healthy. I don't know how Hewlett viewed it, but he must have been flabbergasted at the bubble's inflation and unamazed when the party ended. It must also have looked foreign to him.

Indeed, Silicon Valley must have become a strange place to someone like Hewlett. The valley, where riches were created almost overnight in the 1990s, has been dominated by short-term thinking. That wasn't Hewlett's way of doing things. He believed in thinking for the long term.

The valley is noted for the high percentage of corporate chiefs who ignore all but their corporate goals. Helping the needy, supporting the arts, showing a civic sensibility — those aren't the kind of things you see enough in Silicon Valley, despite its wealth.

Hewlett believed in philanthropy — passionately. He gave away millions to his alma mater, Stanford University, started a public-policy foundation and left the bulk of his estate, estimated at around $9 billion, to a foundation named after him and his first wife, Flora. Along with Packard's foundation, Hewlett's is one of the world's biggest.

The lesson of Hewlett's life seems lost on so many current technology people, for whom the urgency of Internet time — that relentless compression of real time — shoves all other considerations aside. Hewlett and Packard were competitive, all right, but they didn't value paranoia above other qualities, as some modern executives seem to do.

What's missing today in Silicon Valley and across the U.S. is any sense of community. No corporate or political leader can create it. They can only encourage it, by deed and example. Hewlett and Packard lived it.

I wasn't able to make it to Hewlett's memorial service. But a local venture capitalist who was there told me the crowd was almost entirely comprised of people in their late 40s or older. Some of the entrepreneurs who approach his firm don't even know who Hewlett was, he said, shaking his head. ◗

MICHAEL GARTENBERG

Time to Catch Computing's 'Third Wave'

SURF'S UP! The third wave of computing is here, and it'll only get bigger.

This new wave, fueled by the use of many devices and largely driven by end users, is meeting with some resistance in IT organizations. But this isn't new.

Let's go back to the first and second waves of computing. They were easily defined (looking at them with 20/20 hindsight, that is), with the first wave marked by the mainframe and minicomputer, the second wave by the PC.

MICHAEL GARTENBERG, a former vice president and research area director at Gartner Group Inc., is a partner at Hudson Ventures, a Manhattan-based venture capital firm. Contact him at mgartenberg@hudsonvtr.com.

The waves also marked a transition of corporate power as well. In the first wave, IT was often controlled by finance (which is why many old-time CFOs resent IT departments so much — most are direct offshoots of finance departments) and was marked by little to no end-user interaction with the technology. All first-wave interaction was handled by the "pros." The "nonprofessionals" simply submitted requests for information or programs, then waited for some mystical process to happen before their information was handed back on reams of green-and-white striped paper.

From there, IT moved to the second wave, the PC-oriented, client/server model. The move was from pure number-crunching and financial applications (there were no mainframe PowerPoint apps) and "no-touch" to "high-touch" productivity from the end user. With the shift to the second wave, the user became an intimate part of the IT equation. While most users couldn't pick their own computers — and didn't care whether they did so or not — they did have some control over their applications (less as time went by) and had a good deal of control over the information, which they often created and disseminated with only minimal involvement from IT departments (unless, of course, things didn't work).

New types of productivity applications emerged, all designed for the end user. But IT departments initially resisted the second wave, and, as a result, most PC deployments weren't planned and carefully built assets, but were often just a mix of diverse systems that barely spoke to one another.

Now, we're moving into the third wave, which will take us to ubiquitous computing. And again, we're finding IT resistance. Unlike prior waves, this new generation will be fueled by a multitude of devices. Many will be owned and selected by end users, most of whom will own two or three different information appliances. The transition will move from shared corporate information spaces to personal information spaces that share some of the same data, raising all sorts of security issues for end users and enterprises alike. Remember those innocuous PalmPilots that sneaked into your organization? They were first just harmless organizers, used for synching contact and calendar information. Today, they're running rampant in organizations and are part of a new computing platform, with spreadsheets, word processors, Internet capabilities and a host of other functions, all requiring IT support and infrastructure.

It's imperative that IT organizations prepare for the third wave by following a few key steps:

- First, recognize that the "P" in PDA stands for personal. The specific device and operating system a user chooses will be of little consequence in the third wave. But as new platforms and types of equipment emerge, IT departments should create an approved list of supported devices so users will know in advance what will work and what won't.
- IT departments also need to focus on other factors, such as central synchronization standards for data and security of sensitive corporate information.
- Today, most companies are moving from enterprise-defined computing, where IT was secondary to business functions, to computing-defined enterprises, where the business depends on technology. The third wave will extend this to the personal space as well.

So go out and ride the wave!

By the way, this column was written and edited on a Visor Prism with a Stowaway keyboard and transmitted using a VisorPhone module. No PCs or IT departments were harmed in the process. ◗

TECHNOLOGY BRIEF

▶ Alidian and Aevia are Working Together Maximizing Fiber Optics

Imagine doing your grocery shopping at dozens of different stores — picking up eggs at one supermarket, then dashing off to another to grab a gallon of milk. It would be a huge inconvenience, not to mention a total waste of your time.

Yet, IT managers often do the technological equivalent of that, enlisting one service provider to take care of their networking needs, another to handle storage and still others to get applications up and running. IT managers can spend months getting their entire infrastructure set. And, in the event of a problem, often times they need to call several providers to get it fixed.

One - Stop Shopping

Walnut Creek, Calif.-based Aevia Inc. saves IT managers precious time and money. As an application service provider and local exchange carrier, Aevia offers businesses one-stop shopping by virtually fulfilling an IT department's every need. Aevia provides voice and video services, storage area networking (SAN), unified messaging and a host of applications from third-party vendors, while offering high-speed broadband connections in terabit metropolitan-area transport networks.

"We offer a full range of services at very competitive prices," says Doug Picard, president and CEO, Aevia. Picard's goal is to offer 10 megabits to 1 gigabit of capacity and a spectrum of application functionality, including PeopleSoft, Oracle and Microsoft Office software.

Realizing the expense and not wanting to have to pass high costs onto its customers, Aevia decided to maximize the use of the fiber it would need. To help in that effort, it called in Alidian Networks in San Jose, Calif.

Alidian's Optical Service Network (OSN) family of products provides comprehensive service delivery, breadth and awareness within a single, highly scalable architecture for metropolitan-area network (MAN) environments. In short, Alidian technology takes the fiber that Aevia and other companies use and makes it more efficient.

The key is to maximize the amount of data placed on a single strand of fiber. Alidian's tools take customers' electrical inputs — for example, from Ethernet, LAN or storage-area network (SAN) traffic — and puts them on a single strand of fiber within a metropolitan area. Alidian has taken the best of existing technologies and coupled them with patented innovations to yield a hardware and software platform that customers such as Aevia find more cost-efficient than a synchronous optical network (SONET).

As a result, things like storage area network data, IT data, legacy ATM traffic and voice services can be transmitted on a single strand of fiber — quickly and cost-effectively.

"Our claim to fame is the true multi-service aspect of our equipment," says Bob Lefkowits, Alidian's vice president of marketing. "Once a carrier decides to lease that fiber, if they limit themselves to a single service, they're limiting their revenue. Alidian lets them offer a variety of services on that fiber." Just like telephone companies use shared lines for calls, Alidian enables multiple data streams to share fiber, with the equivalent of 16,000 phone calls worth of data on a single strand of fiber, according to Lefkowits.

"Our customers are buying the equipment that lights up the fiber, that takes the standard customer equipment that's there today — like phones, PCs, routers and hubs — and connects them outside of the building over fiber optics."

For Picard, two Alidian technologies were very appealing: WavePack, which allows multiple data types to be carried in native mode on a single wavelength and WaveSwitch, which permits adding and dropping individual services and application flows at multiple MAN nodes, eliminating the usual one-wavelength-per-drop-point requirement.

"Alidian made the only product that could carry the traffic natively, which fit into our technical plan," Picard says. "On top of that they use WaveSwitch technology. I can get more density out of the Alidian product; it's much more efficient, which lowers our overall network cost." In addition, all data is secure and Aevia's uptime is 99.999%.

Alidian's pricing, according to Picard, is competitive while exceeding in functionality. Using Alidian tools, Aevia runs an Ethernet network, allowing less experienced IT professionals to manage it, saving the company manpower. Factor in all the added efficiency, and Aevia is offering a three-megabit connection that will burst up to 10 megabits for $995 per month. Aevia has been busy testing its offerings. "It was very clean," says Picard. "The stuff worked from day one and it never stopped working. Right across the board it was a great test. We base-line tested one set of equipment at a time, starting with Alidian and layering in the rest of the technology ... through the whole test the Alidian stuff was flawless."

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January 29, 2001

Storage Resource Management

Developing a Road Map to Link Global Businesses and their Partners

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Storage Resource Management, or SRM, has taken center stage in the high end storage arena, and companies are discovering how this new tool can link them to their customers, partners and employees

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Users talk about how they are initiating effective SRM practices and procedures

Survey Shows Storage Needs are Growing . . . and Needing IT Support 16

At the recent Storage Networking Industry Association (SNIA) and Computerworld Storage Networking World* conference in Orlando, Fla , attendees were asked a variety of storage related questions Their answers may surprise you

Storage Resource Management

Developing a Road Map to Link Global Businesses and their Partners

Storage Resource Management (SRM) is evolving from a mere tool that monitors and reports on storage as an isolated entity to a set of tools and practices that help companies better serve their customers. SRM has grown to include management of the system, the fabric, the application and the storage devices (primary and secondary) and the efficient backup and recovery of data. Some refer to it as "top-to-bottom integration."

SRM should be further defined as providing a consolidated view, monitoring and measuring the status of all of the resources and deploying active management alternatives to prevent interruption of service and ensuring that adequate plans are in place for future growth.

By Lisa Hart and Michael Peterson, industry analysts, IN_fusion

To understand where SRM fits into your storage solution, think of the storage utility as the dial tone and SRM as the telephone and service that ensures and enables the dial tone. The storage utility — the holy grail of storage — is seamless access to data, regardless of the time or location. It is where applications are universally accessible, sharable, ubiquitous and available around the clock.

Users want to access data in much the same way as they do other utilities such as their telephone, water and electricity. But to do this, there must be an automated, seamless and intelligent way to manage it all. For the storage utility to truly become a reality, organizations must first implement SRM practices for operational reliability and reduce total cost of ownership and overall cost effective storage management. Resources can no longer be managed as individual components in isolation. The overall concept of SRM must evolve to a higher level that is as inclusive and seamless as the future of the storage utility itself.

SRM – The Prelude

Although the storage utility is still a vision of the future, SRM, the enabler of this ubiquitous state, shows promise in helping companies move closer to their business goals and objectives.

"The importance of Storage Resource Management has increased exponentially as information has become more valuable, computing environments have become more complex and the cost to manage this growth continues to spiral out of control," says Dan Stanton, senior manager of corporate information services at a world leading biopharmaceutical firm. "With a shortage of people and resources, many companies cannot afford the time to implement SRM tools, let alone take on the whole management nirvana. Careful planning and a road map are essential elements in determining the proper strategy to accomplish overall cost effective management."

Stanton further states, "A vendor

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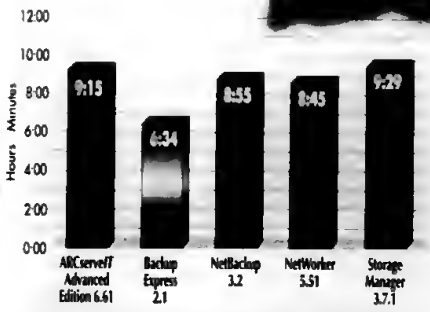
Tom Iwanski, senior product reviewer, *Windows 2000 Magazine* Lab Report (June 2000)



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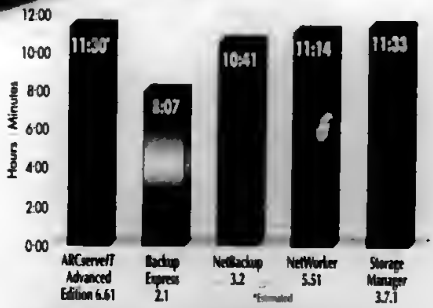

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might have the best tools on the market, but without an appropriate road map and strategy, it would be very difficult to implement them. We must ensure that the tools and practices we deploy match up with our overall corporate objectives. To survive in this information economy you must have a clear understanding of where you are and where you are going. Having a well thought out road map, intelligent tools and adopting new philosophies about the way you manage the information will be key to the success of your business and implementing a true SRM solution."

Explosive Data Growth

Storage is growing at a brisk pace and IT organizations are struggling to deal with the scalability and manageability issues caused by this growth (see chart).

It is estimated that the storage growth rate is between 60% and 100% per year and accelerating. This growth is spurring IT organizations to look for better alternatives to help with the challenge of managing these vast resources, the data that resides on them and the glue that integrates them all together.

Users need a way to navigate the complexities of managing hundreds, maybe hundreds of thousands of heterogeneous systems distributed across the world. Practically overnight, companies have transitioned from storing gigabytes of data to storing and managing terabytes of data that is spread across the country and around the world.

Emerging business applications have shifted to make information a company's most important capital asset. The amount of Web content and management complexities that have emerged from Internet-based applications such as e-business and e-commerce is staggering. Terabyte-plus databases, data warehouses and electronic voice and video mail systems will continue to drive requirements for scalable capacity, optimized performance and global access 24 hours a day. These storage intensive and mission-critical applications have exacerbated the management challenge and driven home the need to include all of the components, even the application, when implementing resource management strategies.

IT managers must now worry about storing vast amounts of data online, offering shared access and implementing a strategy to back it up. They must also keep lifelong archives in case the data is needed again. New applications, such as electronic medicine, are beginning to consume large amounts of storage, and businesses that must deal with medical data are evolving their infrastructures to support different data types that are more visual in nature. These data types include graphs, charts, X-rays and even genetic DNA. Online interaction and virtual sharing of CT scans, digital echocardiograms and lab reports can't tolerate data loss or interruptions that inhibit access to the data.

An example of electronic medicine could be a pharmaceutical company collecting clinical data from different sources about the medicines they provide to hospitals, clinics and doctors. The pharmaceutical company has a "real time" need to analyze and trend the data that has been accessed from multiterabyte databases.

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Designing server network and data storage systems for storage intensive applications like these requires careful planning. These systems hit the limits of today's traditional file management and storage systems capabilities.

The Need for Better Alternatives

Perhaps the most complex aspect of this storage explosion is the control and management of its implementation and growth. There is a huge gap between the two. The total cost of managing storage grows substantially every year, and storage management expertise is becoming increasingly scarce. Depending on the source, it is estimated that more than 600,000 IT positions are currently unfilled and that number increases daily. In addition to a resource shortage, administrators are having to master new skills to manage these heterogeneous, complex infrastructures. Management tools are the bridge that will span this gap.

The cost of storage and bandwidth continues to decrease. But the real cost to organizations is in the management of the data. It's estimated that the cost of managing storage today is three to 10 times greater than the cost of the storage itself. As a result, businesses could be facing a management crisis, if the cost to manage these critical resources continues to spiral out of control.

"Throughout the 1970s and 1980s, storage deployment could be described as a 'many to one,' with all storage devices connected to the server, typically a mainframe," says Fred Moore, president of Horison Information Strategies. "During the late 1980s and 1990s, a 'one to one' relationship developed between the server and storage devices. Devices were dedicated to a particular server, as departmental and distributed servers became widespread," he says.

"Servers and storage were co-located. The LAN then materialized. This decentralized approach created islands of computing and storage that were costly to manage. Most often in this computing model, data was not accessible to another server in the LAN in case of failure. Applications that weren't in a clustered or a symmetrical multiprocessor designed system were unavailable until they could be restarted. The most critical and valuable element of the enterprise, the data, was too often unavailable and the costs for an unscheduled outage remained severe for most every business," says Moore.

It is estimated that more than 600,000 IT positions are currently unfilled and that number increases daily. In addition to a resource shortage, administrators are having to master new skills to manage these heterogeneous, complex infrastructures. Management tools are the bridge that will span this gap.

Organizations are still battling some of the same issues as in the '80s and '90s.

They still have islands of storage, and they still wrestle with the threat of running out of space to store their business critical data. When a corporate network is close to reaching its storage capacity, the usual response from IT managers is to add more hardware. However, the luxury of just adding more storage, even though the cost has decreased significantly, is no longer feasible. Companies have millions and millions of files now to maintain, back up, archive or migrate. Some of these files contain data that is extremely valuable and critical to the success of the company while other files are unused and unnecessary — a waste of space. Reclaiming this valuable space creates a substantial cost savings.

The increase in volume and growing complexity of the data has forced administrators to begin deploying disciplines such as limiting the amount of storage and forcing users to purge old and unnecessary files. Some have even gone to the extreme of establishing quotas that prohibit users from sending or receiving e-mails, for example, until they have eliminated some of their files and created free space.

New storage topologies that encompass storage area networks (SAN), network attached storage (NAS) and a host of other intelligent storage devices have in some ways made more complex, and in others simplified, the often demanding

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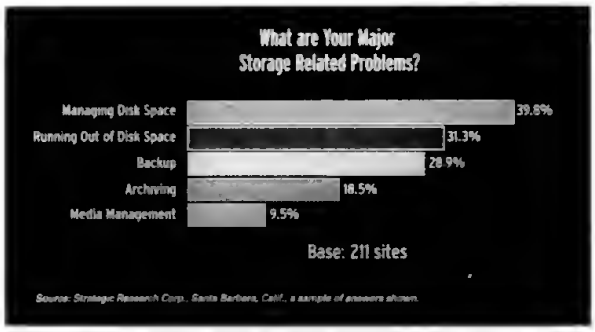
small, midsize and large corporate sites. By 2004, the average total corporate server capacity could exceed more than 31 bytes and a typical network administrator could be managing more than 3000 bytes of net-



Source: Strategic Research Corp., Santa Barbara, Calif., a sample of answers shown.

to keep an inventory of which applications are using the most storage and at what rate, and how often it is backed up. Administrators also have to keep track of who is using it, how much it is consuming, which files can be archived and which ones can be deleted. Add to that the need to plan for future growth and ensure that the data is available day or night, and it's easy to see why managing these precious resources can be arduous and costly.

Research Shows Growth

Strategic Research Corp.'s 2001 Network Demographics report projects that from 1999 to 2004, a typical company's total server capacity will grow at an annual compounded rate of 60%. Although this might seem low by comparison to other projections, the report included a sample of work storage (more than one terabyte in the enterprise data center) in addition to overseeing the workstations that produce the data. These studies demonstrate that manual storage management practices that are no longer tenable from an operational or economical perspective.

"We implemented a three phase approach," says Jim Coles, senior software systems specialist at auto giant DaimlerChrysler. "We use the existing system programs to help monitor our systems, we implemented SRM tools to minimize intervention and give us a more sophisticated way to look at our resources, and we established comprehensive storage policies as our last step to ensure that things don't spin out of control. No matter how much you automate, there will always need to be some level of human intervention."

management challenge

On a SAN, storage is no longer an individual component attached to a specific server but a logically managed, centralized entity independent of any particular server or group of servers. This simplifies the management of disparate systems across an IP network.

With budgets decreasing, storage requirements increasing and a continuing shortage of skilled individuals to manage these expanded infrastructures, it is easy to conclude that environments could eventually become unmanageable. For this reason, many IT managers will eventually begin to look at outsourcing storage management as a viable alternative. In the past year, numerous service providers have emerged offering the promise of seamlessly managing the storage, the application and even the network itself.

A recent Strategic Research Corp survey estimated that databases now contain approximately 55% of all data on disk subsystems across enterprise, midrange and distributed computing platforms. Many of these databases scale to multiterabytes. When IT managers were asked what issues kept them up at night, 39% responded that the most common problem was managing all of the disk space for these multiterabyte applications. Another 31% responded that running out of storage space has become a major problem (see chart). Backing up these huge databases and archiving the right information at the right time also surfaced as key problems that still need to be addressed.

Today, organizations must keep an inventory of how much storage is being consume and where is it allocated to ensure appropriate performance and availability. They also have to keep an inventory of which applications are using the most storage and at what rate, and how often it is backed up. Administrators also have to keep track of who is using it, how much data they consume, which files should be archived and which ones should be deleted. Add to that the need to plan for future growth and ensure that the data is available day and night and it's easy to see why managing these precious resources can be tedious and costly.

Research Shows Growth

Strategic Research Corp's 2001 Network Demographics report projects that from 1999 to 2004, a typical company's total server capacity will grow at an annual compounded rate of 60%. Although this might seem low by comparison to other projections, the report included a sample of small, midsize and large corporate sites. By 2004, the average total corporate server capacity could exceed more than 3T bytes and a typical network administrator could be managing more than 300G bytes of network storage (more than one terabyte in the enterprise data center), in addition to overseeing the workstations that produce the data. These studies demonstrate that manual storage management practices that are no longer tenable from an operational or economical perspective.

"We implemented a three phase approach," says Jim Coles, senior software systems specialist at auto giant DaimlerChrysler. "We use the existing system programs to help monitor our systems, we implemented SRM tools to minimize intervention and give us a more sophisticated way to look at our resources, and we established comprehensive storage policies, as our last step, to ensure that things don't spin out of control. No matter how much you automate there will always need to be some level of human intervention."

VERITAS SANS

VERITAS

There are many commercially available SRM tools. Each product varies in the components it offers, but most provide a framework for automating the analysis of storage, capacity, utilization and availability statistics.

Most of the SRM tools now encompass heterogeneous support, centralized monitoring, alerting, trend analysis and intelligent reporting capabilities. Several of the vendors include in their offerings the ability to predict failures and then take corrective action based on policy driven rules.

More recently, vendors have taken the view that the application is a critical part of management and should be included as part of the tool suite. Storage technologies such as SAN and NAS are making their debut, and vendors are adding support to their existing tools or developing new tool suites targeted specifically at these networked storage environments.

Implementing SRM

IT organizations that have implemented SRM tools have seen countless advantages and rewards in their ability to monitor the rate that space is being used, who is using it and how much they are using. They have been able to spot problems early and implement timely solutions. Administrators no longer spend the whole day collecting information and inserting it into a spreadsheet, which awaits another manual analysis. The sheer automation has improved the integrity of the data, not to mention the cost to manage it.

"Measuring the benefits of SRM can be difficult," says Dennis Kelley, senior systems engineer at HCA, "but it does not take long for management to see the benefit when your production environment is brought to its knees from an undetected failure."

Future SRM Requirements

IT managers need to respond to a request for specific information at any given time about the current state of their enterprise. They must be able to ensure that users have uninterrupted access to applications and stored information.

As organizations begin to take a more centralized approach to management and deploy such storage networking alternatives as SAN and NAS, they must be able to view their entire resource infrastructure.

"We need to be able to manage our heterogeneous environment with a common set of policies and procedures, as well as a set of tools that are all encompassing," says Kelley Green, computer center planning specialist for the state of Utah. Green believes that tools need to include the necessary intelligence and support of a SAN, and the state has recently added one to its pool of managed resources. "Distributed systems have not demonstrated the same reliability as the mainframe environment, which is why we have moved to a SAN. We believe the SAN and associated tools will give us higher availability and improve the management of our resources."

Since applications are driving many of the business decisions, organizations want to ensure that they have immediate access to information and that the application itself is being monitored as part of the overall resources.

"Management tools that give you insight into isolated storage only tell you so much," says Dean Holland of Blue Cross/Blue Shield of Tennessee. "We need management tools that include intelligence about the applications that are utilizing the storage and begin to take proactive measures whenever possible."

Companies continue to ask for advanced tools that automatically de-

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tect, filter, diagnose and suggest solutions, thus easing the burden for systems administrators who have increased their areas of responsibilities. The administrators want tools and policies that help remove them from the day to day management so that they can focus on more business related issues

"I need a tool that is broad enough to encompass all of our platforms It needs to work seamlessly with other third party products, and it needs to be flexible enough to integrate new technologies without a lot of work," says Dick Gorman, enterprise storage manager for discount footwear retailer, Payless ShoeSource Inc

Businesses continue to consume capacity at an incredible rate, which has caused administrators to require detailed information regarding the consumption of the storage — how quickly it is growing, how it's being used and by whom, and in some cases how it is being misused This type of information is critical for capacity planning, setting thresholds and establishing charge backs for various departments within an organization

As a result, reporting has become a critical element within the folds of SRM. Without the proper analysis, IT managers would be unable to report on the given state of their resources or identify critical trends in "real time" that could ultimately affect their business.

Recent studies showed utilization, performance, availability and quality of service as the top reporting categories that IT managers look for in an SRM tool.

"As disk utilization continues to increase, we need reports that provide the user an analysis of all his files and the usage criteria associated with each one," says Bill Wheeler, network systems engineer at VW Credit Inc , a subsidiary of Volkswagen of America "We need SRM tools that automate the management and free up the administrators and engineers to work on other business issues Tools need to have the intelligence built in to automatically archive mail messages, for example, to secondary storage, once the user has hit the threshold for capacity."

Future Outlook

There is an increased need for global access to business critical information This need is forcing organizations to rethink their storage strategies and begin to recognize the importance of SRM as a key element of efficient information delivery.

As companies become more global, the infrastructure and management controls that are required will be even more challenging Storage will continue to grow at phenomenal rates and so will the need to manage that storage and its resources. Eventually, organizations must face up to the reality that true storage resource management must be all-encompassing, comprehensive, extremely intelligent and highly automated to enable their storage utility dream

SRM is more than a set of tools, it's a mind set on how you drive the business, how you efficiently and effectively manage information and how you use that information to make better business decisions.

Companies shouldn't underestimate the value of developing a road map that supports their long term business objectives and establishing a set of policies and procedures consistent with their budgetary constraints. As companies begin managing their business more from an application and business perspective, they need their valuable resources — people — focused on ensuring the timely delivery of business-critical information, rather than worrying whether or not the computing elements are functioning properly

SRM has many different meanings, depending on whom you ask, but one thing everyone can agree on is that as we move into the 21st century, companies can't operate efficiently without it. It is the bridge that links global businesses and their customers, suppliers, employees and partners throughout the world, 24 hours a day What was once a prelude to the storage utility has now taken center stage and is the entry point to the future *

Michael Peterson is president of Strategic Research Corp. in Santa Barbara, Calif., and is founder of the business development firm, IN_fusion, also in Santa Barbara.

Lisa Hart has more than 20 years' experience in the storage and storage networking industry and is a partner at IN_fusion.

Speaking Out about SRM

Users talk about how they are initiating effective SRM practices

"Implementation of monitoring and management tools saved us when one of our primary applications hit the wall. It all started when I was meeting with an auditor from our internal audits group. While we were discussing the security aspects of our systems, my pager went off informing me that one of our file systems had reached a threshold of 96%.

This is how our monitoring and management tools alert me when there is a problem. By the time I logged in, the file system was already at 99% full. Had I not been able to intervene and solve the problem, this primary application would have crashed, bringing approximately 1,500 users with it and an hour of downtime. The cost of downtime for that one event could have been as much as $30,000. The software paid for itself in that one incident."

— Dean Holland,
AIX systems administrator,
Blue Cross/Blue Shield
of Tennessee

"The cost of storage is getting cheaper, which encourages people to store more and more data. The problem is that much of the data is stale or redundant, which is wasting valuable space. Storage Resource Management tools have provided a means to identify which data should be deleted or archived. As a result, we have been able to free up space on the disk, reduce administrative costs in managing it and save time and money in what it would take to back it all up."

— David Jenkins,
network administrator for a
worldwide manufacturer that
builds automotive components

"We have come full circle. We began with a centralized environment of mainframe storage and then added distributed storage devices to our area of responsibility. This decentralized approach added complexity, cost and fueled individualized islands of storage. To address these issues and regain some control, we brought most of our distributed systems under the umbrella of enterprise storage. In so doing, we solved one set of challenges, but introduced a few new ones.

We now needed to understand the needs of these new customers and develop the knowledge of the open environment and associated applications. Although they were under one umbrella, we still needed to manage this group of heterogeneous systems in a seamless, central manner. To help centrally manage this storage, we deployed a SAN initiative, giving us the ability to manage multiple resources in a more controlled way. With this behind us, we are now in the process of bringing on intelligent SAN management SRM tools to move us even closer to our business objectives."

— Ann Ehland,
Systems engineer,
Mellon Financial Services

"In my opinion, the best Storage Resource Management approach is to first do the ground work. Develop a blueprint so that you have everyone's full knowledge and support from the customers to the users to upper management. Without a vision of where you want to go and an endorsement of that direction, even the best management strategies and implementations will fail. There are some very good SRM utilities that will help, but they must be coupled with policies of soft and hard quotas. Having the involvement and buy in from everyone will make the job of implementing SRM and its components a much more manageable task."

— Bill Wheeler,
network systems engineer,
VW Credit Inc.,
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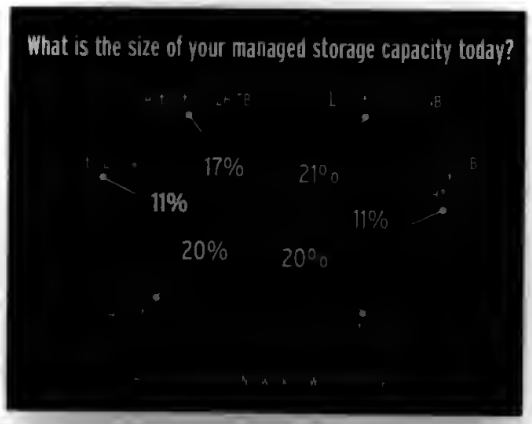
Survey Shows Storage Needs Keep Growing . . .

At the recent Computerworld Storage Networking World conference in Orlando, Fla., attendees were asked a variety of storage related questions. Here is a sample of their answers, which may surprise you.

In November 2000, more than 1,700 attendees arrived in Orlando, Fla. for the Storage Networking World® conference co-sponsored and produced by the Storage Networking Industry Association (SNIA) and Computerworld. They came from all over to hear and learn about enterprise storage. They saw real life examples of storage deployments by users and they talked to industry analysts about the future of storage networking. They also attended technical tutorials given by storage industry experts.

Throughout the conference attendees were given hand-held automated response systems to record their answers to various questions. This feedback was tallied in real time so attendees could compare their thoughts on storage related issues with those of their peers.



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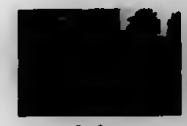

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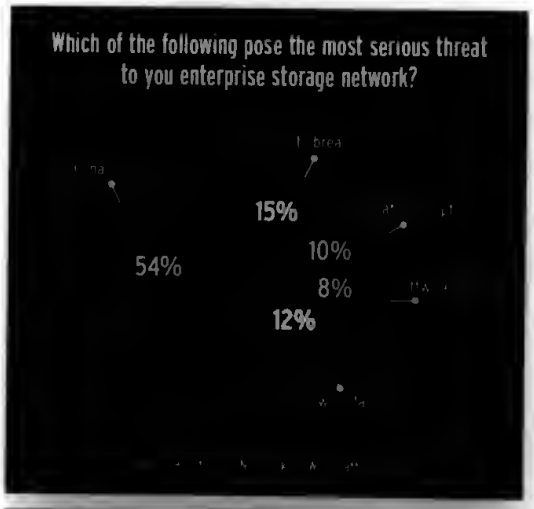
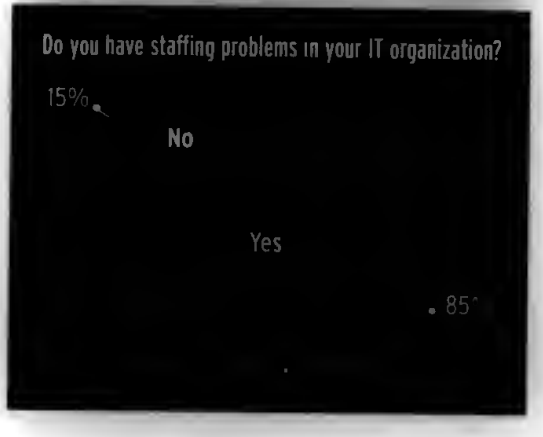
When attendees were asked what poses the biggest threat to their enterprise storage networks, more than half cited human error. Eight-five per cent admit that they do have staffing problems within their IT departments, which may explain the perceived threat.

The next Storage Networking World® will be held April 9 to April 11, 2001 at the Marriott Desert Springs Resort and Spa, Palm Desert, Calif.

For more information on Storage Networking World®, including registration and the conference agenda go to www.computerworld.com/snw





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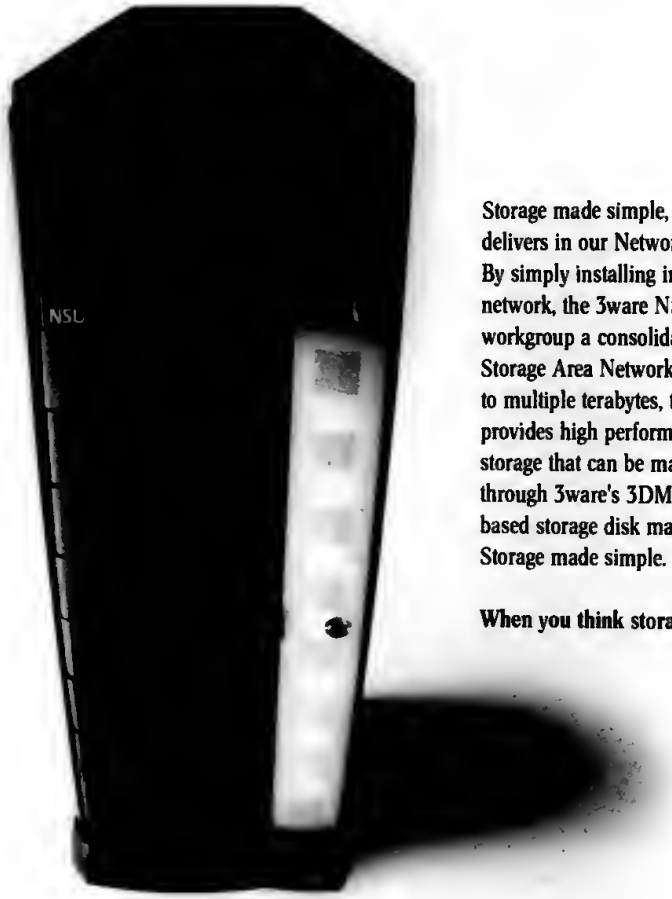

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BUSINESS

FIFTH AVENUE FRINGE BENEFITS

When Saks decided to install a new customer relationship management system, its goal was to improve customer service. However, the retailer says it soon discovered an added benefit to the tune of $1 billion in savings. ▸ 36

MONEY MATTERS

Juno Online Services is breaking new ground by offering financial services under its own brand name rather than through partners' Web sites. Juno says the new service will mean added convenience for its customers, but analysts question whether people will trust an Internet service provider with their money. ▸ 38

CENTRAL INTELLIGENCE

The Internet and corporate spending on IT have ushered in a new version of an old debate: Sbould the IT organization be centralized or not? But, writes columnist Jim Champy, the debate can't just center around the old terms of control. ▸ 38

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With the Super Bowl over, Monster.com is waiting to find out if it's a winner. In a recent interview with *Computerworld*, the company's chief technology officer, Brian Farrey, spoke about the online job site's Super Bowl ads and what it's like to work in Monster's IT department. ▸ 38

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TURNING THE TABLES

Procter & Gamble CIO Steve David says be's used to being in control. But last year, he stepped aside and let scientist Lois Lehman-McKeeman take charge. David and Lehman-McKeeman were one of a dozen executive/scientist pairs to team up for the company's biotechnology reverse-mentoring program. ▸ 42

MBA CROSSROADS

With the ever-increasing intersection of business and technology, MBAs are starting to make sense for more IT pros. But how can an executive commit the time? Rashi Rai, a senior systems analyst at Merck, went with a four-year part-time program at Rutgers, while Christopber P. Ricciuti at IBM Global Services cbose an intensive two-year executive MBA program at Northwestern's Kellogg Graduate School of Management. ▸ 48

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PUTTING QUALITY IN WEB PROJECTS

DO ONLINE PROJECTS present the same quality challenges as traditional IT projects? Or does Internet development demand a new approach to quality? IT leaders can't agree on an answer. But some companies, like GE Aircraft Engines, are embarking on new approaches to dealing with this issue.

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CRM System Helps Retailer Focus on 'Best Customers'

Call center installation also lets Saks pare payroll costs

BY MARC L. SONGINI

Saks Inc.'s customer relationship management (CRM) implementation has delivered a pleasant surprise: It has saved the company money.

During the past year, the mammoth Birmingham, Ala.-based retailer implemented a call center system that routes queries from various channels — e-mail, fax and the Internet — to its support staff through a single multimedia portal. The company, which operates the Saks Fifth Avenue, Proffitt's and Parisian upscale department stores, said the consolidation has boosted its call center productivity by 40% without requiring additional staffing, resulting in $1 million in payroll cost savings.

RODGERS: "[The] best customers get to the best-trained associates first."

The new system, based on applications from Aspect Communications Corp. in San Jose, has also helped shorten the average time it takes to respond to a call from 45 seconds to 8 seconds.

The three call centers in Mississippi, Maryland and Illinois are linked electronically and operate like a single facility. Saks has applications that can route calls to the most appropriate service representatives, no matter where they're located, as well as evenly distribute queries among the centers.

For example, if the Mississippi facility is swamped with customer calls, the system will route incoming calls to a center that's less busy, said Michael Rodgers, senior vice president of credit at Saks.

"It gives us a tremendous amount of flexibility," he said. And, he added, it ensures that the "best customers get to the best-trained associates first."

By reading data associated with customer calls, the system can determine who the customers are and their value to Saks, ensuring that key customers get the fastest service, Rodgers said. However, when less-profitable customers are forced to wait 30 seconds or longer, they then get bumped to top priority status, he said.

Using the personalized data presented through the portal, support staff can then up-sell or cross-sell to customers.

Leading the Pack

Rodgers said the implementation cost in the millions, but he didn't go into specifics.

However, he did say that a Saks' credit card call center in Jackson, Miss., was able to take on 16% more customer contacts without hiring new staff, resulting in a payroll savings of $750,000 per year, which contributed to the overall $1 million in savings.

The company is one of the first retailers to push ahead with electronic CRM applications, said Katrina Howell, an analyst at Frost & Sullivan Inc., a market research firm in San Jose.

In fact, no other major retailer — including Macys.com parent company Federated Department Stores Inc. and Nordstrom Inc. — has launched a CRM system that seamlessly integrates so many channels, said Esteban Colsky, an analyst at Stamford, Conn.-based Gartner Group Inc.

The implementation, said Howell, will allow Saks to segment its most-profitable customers away from the least-profitable customers — the ones who "complain and drain resources and return products," she said.

ISP Juno Offers Financial Services

BY MARIA TROMBLY

Juno, one of the nation's largest Internet service providers, is changing the definition of what it means to be a financial services portal. It's beginning to offer banking and insurance products under its own brand name — and now seeks to expand into brokerage services.

It's a radical departure from the way most portals set up partnerships with financial services institutions, said Larry Tabb, an analyst at Needham, Mass.-based TowerGroup.

"One of the major issues is whether their clients will trust them with their money," said Tabb. "There's a difference between buying Internet services from an ISP and trusting them to hold cash and securities."

STROGOV: Juno is looking for online brokerage allies.

Instead of featuring preferred providers or running banner ads on its Web pages to drive customers to partners' Web sites, New York-based Juno Online Services Inc. has formed relationships with a bank and an insurance company to offer private-label financial products in return for a cut of the revenues.

High Expectations

Juno executives said that being able to get a Juno checking account or auto insurance policy is a convenience for customers — and a potentially profitable revenue stream for the Internet service provider. For example, through its partnership with The Hartford Financial Services Group Inc. in Hartford, Conn., Juno doesn't just collect commissions when a customer looks at an ad, clicks on it or actually buys an insurance product.

"Every time they pay their insurance premium, we get a percentage of their checks," said Juno spokesman Gary Baker.

That's the same kind of deal Juno is looking for when it comes to allying with an online brokerage, said Leelila Strogov, the company's senior vice president of business development.

In September, Juno had 3.7 million active customers, making it the third-largest Internet service provider in the nation behind Dulles, Va.-based America Online Inc. (now a subsidiary of AOL Time Warner Inc. in New York) and EarthLink Inc. in Atlanta. Strogov declined to comment on how many of these customers have taken advantage of Juno's banking and insurance products.

For banking partner National InterBank in Irvine, Calif., the Juno deal isn't unique. It already has a co-branding arrangement with About.com Inc., a subsidiary of New York-based Primedia Inc., and with PNV Inc., a professional long-haul truckers' portal in Coral Springs, Fla., that filed for bankruptcy late last month.

Customers visit the bank through a private-label portal with the words "Powered by National InterBank" high on the page, said Tony Plohoros, a spokesman for the online bank. Customers have access to checking and savings accounts, online bill payment, credit cards, auto loans and mortgages.

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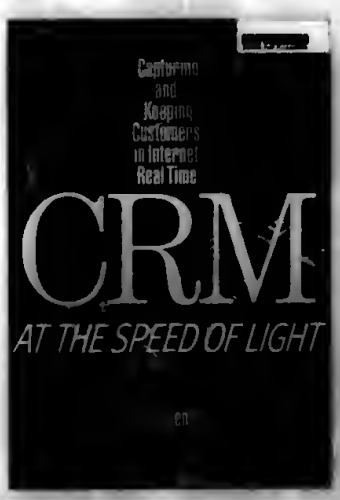

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WORKSTYLES

Monster.com Hopes for Big Win After Yesterday's Big Game

Now that the Super Bowl is over, the IT staff at **Monster.com** has its defensive line ready for an anticipated postgame blitz generated by three ads that were slated to debut during the game.

Computerworld recently huddled with **Brian Farrey**, chief technology officer at Maynard, Mass.-based Monster.com, as he finalized his game plan.

Number of IT employees: 170 in two locations

Number of employees (end users): 1,300 worldwide

Why did you run ads during the Super Bowl when so many dot-coms bowed out this year? "We were the first dot-com to do a Super Bowl ad, and . . . [this year] we stand out as saying, 'This dot-com can afford it and continues to do well.' I'm not sure you can say that about any of the others that advertised last year. With our marketing budget, this is just another event for us, whereas for many last year, it was their only event, which was a flawed strategy."

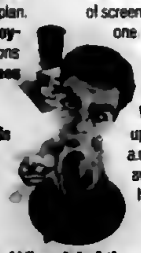
What's your average site traffic in January? "On a typical Sunday night, we might get 10 million page hits."

What kind of traffic spike do you anticipate after the Super Bowl ads run? "We expect quick spikes during the game, for about five minutes, right when each ad airs. . . . We're preparing for a doubling of our usual January traffic for the first two weeks after the game. Traffic will slowly trail off after that."

What impact does that have on IT? "This is the time of year when we're focused on performance and scalability, putting as many servers as possible into production, installing new monitoring tools and reviewing all of our network connections. We do a lot of external volume and stress testing that's all related to the Super Bowl.

"We start in December and finish up two weeks before the Super Bowl. Then we lock down production – we won't make any equipment changes or add new code."

What's your game plan during the Super Bowl? "We'll have about 10 IT people on-site here and four [at another data center] in Indianapolis in case there are issues. Here, we'll have a party in a large conference room equipped with multiple screens. We'll have monitoring tools up on a couple of screens – the Super Bowl on one. And we'll probably also be playing video games – we're tech guys, after all."



What It's Like To Work at...

Workday: "Coming up to the Super Bowl, 8 a.m. to 6 p.m. People are averaging 50 to 55 hours a week."

Must people carry beepers? Cell phones? "People get called after hours maybe a couple of times a week. The database group probably gets the most calls."

Employee reviews: Annual performance reviews, plus informal quarterly and project-based reviews.

Compensation and bonuses: "Our applications developers are paid hourly, so that's different than the industry norm. They're full-time employees, but they're paid whenever they work. . . . We have some project-based bonuses for large projects, and other major contributors outside of development get bonuses."

Dress code: "Is there something less than business casual? Then we're that."

Kind of offices: Open space with cubes. "We're in one of the original old [Digital Equipment Corp.] facilities, so that's interesting in terms of transformation from the Old Economy to the Digital Economy."

On-site amenities: The Monster Den, featuring a food bar plus pingpong and pool tables.

Free refreshments: Bagels, fruit, Gummy Bears, yogurt pretzels, sandwiches and more

Would employees feel comfortable e-mailing the CEO? "Yeah, it's just the culture here that anyone can talk to anyone."

– Leslie Goff (lgoff@ix.netcom.com)

JIM CHAMPY

A New Old Debate

I WAS TAKEN ABACK RECENTLY when, within a week, executives from several large corporations called with the same question: Should we recentralize our IT function? It wasn't the coincidence of many companies asking the same question at the same time that was so surprising as much as the retro nature of the question itself.

I have seen and participated in the IT centralization/decentralization debate about every 10 years. The first debate took place when minicomputers gave rise to departmentalized computing in the 1970s. The next debate came with the proliferation of PCs in the '80s. During both debates, managers argued over who should control the computing anarchy that those little machines were causing inside their companies. Now, the Internet is reviving the argument.

But the debate shouldn't even be rooted in those old terms of control. The Internet, combined with inexpensive and wireless devices, makes IT too ubiquitous to think — much less argue — about "controlling." In fact, companies should think more about how to make technology and information even *more* available.

Yet business executives have a certain angst about the management of IT. That angst has multiple sources:

- Companies have spent considerable money recently on technology like ERP applications or Y2k preparedness. Many companies still need to do a lot of work to get their systems Internet-ready — that is, linking their customer-facing systems to their supply-chain infrastructures. IT managers are looking for more money at a time when companies want to lower overall operating costs in a tough, competitive environment. Business executives want to make sure that money is being spent where there will be a sure and fast return. Centralized authority and accountability is one way to do that.
- Many companies haven't solved the problems of connectivity. They have multiple networks, e-mail systems and applications operating across different parts of their operations. People and divisions can't work together as easily as at Cisco, the paradigm of interconnectivity. So why not centralize IT and fix the problem?
- And then there are more forward-thinking business executives who see that IT's real value is its ability to enable changes in processes and strategy. Where is that thinking going on, and how can a company pull together an intelligent, customer-facing strategy if everyone is doing what they wish with IT and over the Internet? Centralization seems to be the answer.

But the answer to these questions isn't in re-creating a controlling IT function a la 1970. The answer lies in a two-pronged approach. First, create a standard technology platform on which the whole company operates. And simultaneously create an intellectual center that can conceive and help implement companywide strategies that leverage IT. The first is more easily done, but requires hard thought about what needs to be standardized. The approach should consider hardware, software, processes, applications and data. Most people will quickly agree to standardizing hardware and software.

> *The solution isn't to re-create a controlling IT function.*

But be prepared for long debates about what processes and data need to be uniform. Getting this answer right will be critical to a company's ability to operate effectively in electronic markets. A company's processes and systems need to be integrated, not fragmented, in order to face customers electronically.

The most formidable challenge for a company will be the hard intellectual work of seeing how to leverage the opportunity of new information technologies like the Internet or wireless devices. Strategy work can be encouraged or assisted by a central IT function, but it can't be solely done there. Ideas must come from the business units. At the same time, some orchestration or technology intelligence may be required that goes beyond normal IT functions. That's where the role of a chief technology officer can be effective, or where a small group of business and technology managers can come together to be sure that the company is leading with technology rather than being led by it and becoming its victim.

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. You can contact him at JimChampy@ps.net.

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HEROES WANTED

One of the best ways IT pros can grow is to find mentors whom they can learn from and lean on — and who will go to bat for them when needed.
By Joanne Cummings

INVISIBLE TO UPPER management. Ignored when it came to advancement. Dene Bettmeng learned the hard way what can happen when you don't have a mentor within the upper echelons of your IT organization.

"I didn't have anybody going to bat for me, and when it came time for promotions, I wasn't considered because they basically forgot I was there," Bettmeng says.

At the time, Bettmeng was reporting directly to the president of the division. "Unfortunately, the vice presidents were making the decisions, and they only considered their own staff people. I wasn't even on the list," she says.

After assessing the situation, Bettmeng came to the conclusion that she would have been high on the list if someone had thought to include her.

"I absolutely would have beeo considered," she says. "I just wish I'd been in regular contact with someone on the staff making these decisions."

MENTORS FINDING ONE

Bettmeng, who most recently was director of worldwide operations at Denver-based J.D. Edwards, but has also been an IT manager at United Air Lines Inc. and American Airlines Inc.'s Sabre system, says she realized that she needed to seek out a mentor. "It really underscored the importance," she says.

IT professionals seek mentors who display qualities they wish to hone in themselves.

"A mentor is someone you admire — the way they work and make their decisions — and for me, it's important the way they handle themselves in general," says a technical support manager at a leading financial services firm who asked not to be identified. "I look to find the qualities that I'm trying to gain myself, and go from there."

Bettmeng says she agrees.

"You should definitely look for someone who you like, respect and admire. Those elements need to be there," she says. "They should also have enough influence and experience in the organization that they can help you in terms of political battles and go to bat for you when necessary."

IT TAKES TIME

Finding such a person can take a while, especially since the best candidates may not be people with whom you have day-to-day contact.

"You doo't want the mentor to be your manager," Bettmeng says. "You need to look for someone higher up in the organization, but with whom you can have almost a peer relationship. Yon have to be comfortable enough with them that you think of each other as peers and can speak candidly."

Once you've made the choice, approaching the mentor can be as simple as asking him to lunch. "They're usually flattered," Bettmeng says. "It might be tough to get someone to commit the time, but a

good way is to take them out to lunch on a continual basis. That's a relatively easy thing to set up."

Although some organizations have formal mentoring programs that link staffers with suitable mentors, finding a mentor is usually something IT professionals do on their own, without a manager's input.

"For me, it's more casual," Bettmeng says. "I focus on someone who can help me gain the skills I need and approach them myself."

If a good mentor within your department is difficult to find, however, finding an executive coach outside the organization can help too.

"I've had an executive coach who helped me develop my leadership skills," Bettmeng says. "And a lot of times, that's all you may need. But I still felt like I needed a mentor within the organization to help me navigate the organization. I wanted someone to show me the pitfalls, so when I came forward with projects and tried to get funding, I'd have some proven strategies."

BENEFITS FOLLOW RAPPORT

Once you've established a rapport with a mentor, the benefits, which range from tips on how to handle staffers to strategies for selling projects to upper management, usually follow immediately.

"You pick up all kinds of things that are important for a strong IT career," says Rachel Dorman, e-commerce content manager at GE Industrial Systems in Plainville, Conn. Dorman participated in GE's reverse-mentoring program, which pairs younger Web-savvy IT staffers with top executives looking to broaden their Internet skills.

"At first, it was daunting," Dorman says, referring to mentoring Lloyd Trotter, CEO and president of her division. "I was almost overwhelmed that I would have some knowledge that he didn't have."

But as time went on, Dorman says she soon found that she was picking up quite a bit from their regular monthly meetings, too.

"I bounce ideas off of him, tell him about things I'm planning to do," Dorman says. "And he tells me of business problems they're looking to solve, where maybe I can add something in terms of how to address it with the technology. It's worked out really well."

There is a major caveat in choosing a mentor, however. "You may think you've found a good mentor, with experience and influence in the organization," Bettmeng says. "But as time goes on, it becomes apparent that they don't. At that point, it's difficult to extricate yourself from the situation."

It's important that mentors have such influence because you may need them to champion your cause, Bettmeng says.

"You need a champion, especially in organizations that don't have the tools to assess people's management skills and potential, things like the 360-degree review," Bettmeng says, referring to reviews in which managers are assessed not only by their managers, but also by their staffers.

"They can't see who's doing a good job of leading their staff, so it helps if you have someone who can point it out and put your name out there," she says.

But dropping one mentor and choosing another can be dicey.

"That person is going to find out if suddenly you're not calling for lunches, especially if you've found someone else who's mentoring you," Bettmeng says. "That's why it's important to take the time up front to make sure the person you choose is the right one."

GUIDING HANDS

IT pros who have served as mentors say it can be hard to find the time. But the return on your investment can be tenfold to the business, the mentoree and your own career. By Joanne Cummings

IT PROFESSIONALS who have to juggle multiple projects but have too few hands and face too many demands from upper management sometimes drop the ball when it comes to mentoring.

"We're all too busy," says Tom Aikens, a vice president and general manager within the IT business group at McKesson HBOC Inc., a pharmaceutical and health care supplier in Lake Mary, Fla. "But when you take the time to mentor, it's amazing what you can get out of it."

Aikens is currently mentoring three junior members of his team on a regular basis as part of a formal mentoring program within IT.

"We meet one-on-one for an hour about every three weeks," he says. "And that is a negligible amount of time over a calendar year."

Even that makes a difference, Aikens says, because it gives his mentorees regular access to his thought processes and suggestions.

"I have more assurance that when they're dealing with their staff, peers or even my customers, their actions are going to be in line with where I'm trying to drive the business," he says.

Others find mentoring is a way to ensure that IT has a seat at the table when it comes to building key business strategy.

"I absolutely carve out the time for mentoring," says Bob Barone, senior vice president of IT and operations and CIO at Nashville-based Broadcast Music Inc. (BMI). He says he tries to act as a mentor for every member of his staff, both at the middle management and entry levels, and that he makes himself available for anyone who might need guidance.

"It's extremely important because of the general lack of acceptance of IT as a business force within most organizations. IT types are usually perceived as the people who run the computers and that's it. To get past that perception, I try to mentor my people on the political and business side."

Aikens says he focuses on three major issues, primarily aimed at improving the mentorees' people skills. These include brainstorming ways to approach hot-button issues, providing constructive feedback on the mentoree's interaction with management and peers and dealing with differences in the way staffers and others approach projects.

"The people skills are what I try to concentrate on the most," Aikens says. "I try to teach them that you get more done by working with others than by going around them or through them. That's an area I think a lot of technical people need help in."

As with most things IT, there's a right way and a wrong way to mentor. One common pitfall is to be too protective of employees, seasoned mentors say.

"You can't save them from going through everything you went through," says Jay Abel, CIO at Viata Online Inc., a Honolulu-based online travel and reservations company. "It may sound cold, but sometimes they need to make their own mistakes."

Abel says this strategy helps instill confidence within mentorees. "It's really important for them to develop their own sense of how to start and finish things and make their own decisions," he says. "I'm there as a guide if they have questions, but at some point, you really need to be hands-off."

BMI's Barone says he also takes a kind of sink-or-swim approach, especially when it comes to navigating IT's political waters.

"If I see they have that initial 'bean' of political understanding, I'll put them in positions where they will be tasked to do some more political-type things and see how they do," Barone says. "It's great when you see them run with it and move up through the ranks."

But perhaps the most important part of the mentoring relationship goes beyond being an ally. Mentors need to be able to deliver constructive criticism and feedback in a tactful manner.

"I'm not there to be their friend," says Aikens. "You can't have them think you're exclusively their ally and it's OK for them to make mistakes, because there are some mistakes that just are not appropriate."

MENTORS BEING ONE

Cummings is a freelance writer in North Andover, Mass.

COACHING THE BOSS

Known as reverse mentoring, providing top executives with mentors from different departments is a proven way to help technologists understand the needs and workings of the business units. By Melissa Solomon

IN HIS 30 YEARS at Procter & Gamble Co. (P&G), CIO **Steve David** says he has learned a thing or two about meotoring. He's been involved in 30 to 40 mentoring relationships, often juggling four or five at a time. But recently, David had the tables turned on him. He participated in a reverse-meotoring program with **Lois Lehman-McKeeman**, who holds a Ph.D. in toxicology, and for the first time in a long time, he was the person being mentored. Cincinnati-based P&G's reverse-mentoring programs match up employees with executives to give senior management a new perspective in one of the following areas: diversity, biotechnology or IT.

MENTORS REVERSAL

Through the biotechnology reverse-mentoring program, 12 of the company's life scientists spent the past year teaching top managers about the implications of biotechnology on the business. *Computerworld*'s Melissa Solomon recently spoke with David and Lehman-McKeeman about their experience.

How did you get involved in the mentoring program?

David: Well, I think P&G has had some type of mentoring program for as long back as I can remember. I had a mentor when I started with the company. The reverse-mentoring program was an outgrowth of the mentoring program, and I think we've used it for the last five to 10 years in different areas where we really thought that we needed to either change the culture or have more sensitivity to certain types of issues.

What was your goal with the biotechnology reverse-mentoring program?

David: We realized that the biotech issue was going to be something that was going to be very important for Procter & Gamble and our customers and our suppliers. Our senior leadership was not very well equipped to deal with this particular technology, and we needed to do something. So it was really trying to start from scratch to say, "How can we get people educated?" and "How can we tap into the resources that we have at P&G to move much more quickly in this area?"

How did you structure your relationship?

Lehman-McKeeman: We tried scheduling meetings; sometimes that didn't work. But we tried to meet about once every one to two months. . . . Frequently, we met over lunch, in part because that was convenient, but Steve also came to the lab, and so we actually did some things in the lab.

I mapped out what I thought would be literally like a course of instruction . . . although the more I worked with Steve and I saw what things interested him or how he reacted and learned different things, I just tried to cater my discussions to things that I knew would pique his interest. We started from the very fundamental concepts of the building blocks of "What is a gene?" and "What is DNA?" and moved up to some fairly high-tech technology and application of technology.

David: Lois is one of the brightest people that I've ever met. So the challenges were really scope challenges initially. My starting point and her starting point were not at total different ends of the spectrum, but mine was more from a business standpoint — what impact will biotech have on our business? — and Lois' was more buried in the science. So that was probably the first interesting challenge: to find the level where we could both operate together.

And how did you do that?

David: Well, I think the most important thing in any mentoring situation is the fact that you have to let yourself be vulnerable. This is not a boss-subordinate type of relationship. This is one where, particularly in reverse mentoring, you're the student again. And that is a little bit difficult for some of us, where we're used to running organizations of up to 20,000 people and sometimes calling the shots. It's coming to grips with what we're trying to accomplish, and where we want to be either six months or a year from now, and theo getting to know each other in a way that you can trust each other.

What did you get out of the mentoring program?

Lehman-McKeeman: A whole slew of things. I think seeing how senior managers think through problems, think through new information; how they cut to the very core of an issue or a question — that's been a real learning experience for me.

David: I really do get a great friend out of this, and that's one reason that keeps me going. And hopefully, the people that I've worked with, they get a better feeling for a career at P&G, and therefore they stay and become more productive employees. That feels good to me.

What I get out of [the biotech meotorship] is I think I understand the business relevancy, but I doo't understand the depth of the science. Lois has helped me to put an underpinning of the science into the business issues, so infusing the science into the business issues has made me much more knowledgeable, much more able to address with our customers and our suppliers the issues associated with this biotecb revolution.

What are the biggest challenges associated with formal mentoring programs?

David: Quite frankly, more mentoring relationships fail than probably succeed. And that's because either people are not putting the appropriate amount of time into it, or they're not taking the mentoring sessions seriously. . . . It has to be something that you really kind of feel down in your toes that you're either going to learn or he helped by those situations, or you're going to help someone in those situations.

Is there any other advice you'd offer to CIOs who are considering entering into a mentor relationship?

David: Start with the end in mind. What are you trying to accomplish? It's just absolutely critical. I mean, don't do it just because it's the soup du jour.

Lehman-McKeeman: There were 12 of us who were mentors [in the biotech program], and we met probably quarterly, and that was a useful exchange of information. We actually learned from each other — if I had developed a lecture or I had found a good Web site of information, we could share all of that, so we really weren't doing this all by our lonesome. ▶

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Ensuring E

Is an Internet project just another project, or is everything you know about quality obsolete? By Kathleen Melymuka

NO RULES! NO FEAR! Everything you know is obsolete. That's the Internet mantra, and for a while, even the stock market played the game. But as the Nasdaq bubble has deflated, Internet exhilaration has yielded to practical concerns like quality.

"The market has clearly sent a signal in the last six to 12 months that we've entered into the next phase of Internet evolution, and the same goes for business models and software models," says Eric Singleton, director of electronic business at Raytheon Co. in Lexington, Mass.

It's clear that the ad hoc development that characterized early, content-oriented Internet brochure-ware doesn't measure up to the demands of today's transaction-intensive environment. But are Web projects simply projects, presenting the same quality challenges as projects of the past? Or does Internet development demand a new approach to quality?

For Singleton, a project is a project. People claim they're "flying by the seat of the pants and really being creative, saying this is a whole different world and we have to make it up as we go along," he says. "But that's the oldest argument in the world, and it's been proven wrong time and time again."

In the 1990s, Singleton recalls, "there was a subculture that said the development of [Windows-based systems] was such a fluid thing, it really didn't fit in with any type of process modeling." But it soon became clear that the old rules still applied, he says.

Singleton says he suspects that a no-rules approach to Internet development began in the early days, when people could still get away with it. "There did seem to be a proliferation of activity largely about creativity and look-and-feel," he says. "The emphasis in brochureware was on content, art, layout — soft, frilly stuff without many moving parts."

Changing Nature of Projects

But the nature of Internet projects has changed from being content-oriented to more business-transaction-focused, says Jim Highsmith, a consultant at Cutter Consortium in Arlington, Mass. "It's not cool to drop transactions, so the quality, in terms of defect levels, has got to be higher," he says.

Unfortunately, just the opposite has been happening. According to Howard Rubin, a research fellow at Meta Group Inc. in Stamford, Conn., U.S. software development was on an upward spiral from 1997 to 1999, with defect rates improving by about 10%. But from 1999 to 2000 — paralleling the big bump in Internet development — quality rates in software programming deteriorated 15%, he says. Rubin says that a drop in design time and documentation has paralleled the decline in quality.

"Some rigor was building up," he says. "But now, people are trying to build stuff at Net speed, and some are falling back into old habits."

Bill Sanders, CIO at Honeywell International Inc. in Morristown, N.J., says that good software development processes actually save time. "Speed doesn't always equal quality, but true quality always equals speed," he explains.

For example, Sanders says, in the old IT world, mainframe architectures were fairly inflexible. "Big mainframe systems used this operating system, and you had to define the files this way or that way, but there was an architecture that was all set up," says Sanders. With Internet-based environments, there are more choices, so an undisciplined shop could waste time by starting from scratch with a different architecture every time, he says.

In contrast, a quality methodology should include a predefined template outlining the best architecture choices for various types of business systems.

Sanders stresses that he's not advocating a standard set in concrete, but rather a framework, "so you're not starting out from ground zero, yet you're not so prescribed that every business problem uses the same architecture." People who don't understand real quality processes may think that they don't work in the Internet environment, he says, but they're wrong.

"They say, 'We've got to go fast and we've got to go by the seat of the pants,' and that's why we make mistakes," Sanders says. "I just wouldn't accept it."

"I don't see much difference between Internet and other projects," says Tim Byers, CIO at Shell Energy Services Co. in Houston. He says that some projects do require adjustments in quality methodology, but those are based more on the nature of the project than on the environment in which it operates. "I define quality as 'fit for purpose,' " he says. "There's not just one quality you have to shoot for. You need to understand what quality the business is willing to accept, [and] you test to that quality."

Byers' team often builds Internet projects with

PHOTOGRAPHS BY JIM CALLAWAY

predetermioed, short life spans. For such projects, he says, "we may do things we wouldn't do oo a larger project where the quality needs to be higher because it oeeds to be around longer."

For example, Shell Energy receotly developed a Web site to enable resideotial customers to sign up for service during a two and a half week regulatory window. Rather than having programmers develop the site, testers validate it and support people maintain it, Byers brought in a team of eight programmers and testers who worked to get the site up quickly and then doubled the support staff to maintain it for two weeks. "They built it and supported it while it was out there, and after that, they went on to something else," he says.

The key difference in that project was the duration, Byers says. "I'd do the same thing oo a client/server application that will be out there just a little while," he says. "And if it's a strategic application on the Internet, you do the same classical things but with a different tool set. It all comes down to fit for purpose."

But Cutter's Highsmith says Ioternet projects are different because of their high speed, changeability and uncertainty and require an approacb to quality that he calls "light methodology."

"In the past, we have equated discipline with formality, and we've got to unlink those," Highsmith says. "Documeotation is oot understanding; formality is not discipline; process is not skill." He says the questioo for quality-oriented Internet project managers to ponder is, "How do I lighten up and maintain quality and improve speed and flexibility?"

The folks at GE Aircraft Engines (GEAE) in Cincinnati seem to have found an approach to quality that does just that. When e-process leader Debby Sollenberger put together a "digital desktop" intranet last year, she used a methodology cobbled together from traditional GEAE and General Electric Co. quality processes, GE's companywide Six Sigma quality initiative, and e-business requirements.

The digital desktop allows GEAE employees to customize their access to any of 400,000 online files and interactive sites that they may oeed. Sollenberger's group had the site operational within one mooth. "This was very, very fast and very exciting," she says.

Sollenberger says the aircraft parts maker follows what it calls the New Product Introduction (NPI) process. The NPI is spelled out in "a huge notebook — about 2 inches thick — laying out step-by-step what you do, day to day, to introduce a new product or process," she says. "It's extremely rigorous and detailed and about as thorough as you can imagine."

But NPI wasn't designed for e-business, so GEAE condensed 2 inches of notebook pages and five years of Six Sigma experience into one page of deliverables, combining the speed of the Internet with the rigor of the Six Sigma program and NPI. The result was called eNPI. "Of course, behind each deliverable is a checklist, so it's really longer," she says. "But the one-pager is the critical things an e-project needs to consider."

ENPI takes the angst out of lightning-speed development, Sollenberger says. "We're confident that now that we have this in place, we're not going to miss something huge and let quality suffer," she says.

One quality methodology doesn't fit all, and the Internet may require some flexibility. But whether your quality methodology is heavy, light or hybrid, it's a tool that's designed to save time, not consume it.

"If you start with a true quality focus and a methodology, those actually help you do things faster," says Honeywell's Sanders. "They are fully consistent with speed and what we want to do in an Internet world."

Building In E-Quality

GEAE's eNPI quality program is designed to build quality into Internet projects that have to be done quickly. Here are some of the steps that less-disciplined developers might miss.

▸**PREWORK.** Analyze the project's scope by defining, measuring and analyzing the customer's requirements to clearly understand the whys behind the project.

▸**CHARTER.** Who's buying into the project? What's the current process, and what will the new e-process look like? What issues are critical to quality?

▸**REALITY CHECK.** Conduct an examination of issues such as resources, best-in-class technologies, options for outsourcing and build vs. buy

▸**TOLLGATES.** These are 10 points at which the previous steps are checked and important questions are answered before the initiative can continue.

Windows 2000 ADVANTAG

The Web Magazine for IT Leaders Implementing Windows 2000 and Windows NT with Compaq Services and Solutions

Online this week:

POINT OF VIEW

Compaq Integration2000 delivers enterprise e-commerce solutions

Integrating enterprise applications recently got a boost with Compaq's Integration2000. The initiative helps solve the largest, most difficult business integration problems.
www.windows2000advantage.com/pov/12-11-00_integration.asp

TECH EDGE

The Windows 2000 IT Professional Certification Program

Microsoft provides vendor-sponsored IT-professional certifications across many areas of expertise. The program has over 600,000 people qualified as Microsoft Certified Professionals (MCPs).
www.windows2000advantage.com/tech_edge/01-15-01_mcse.asp

Q & A

Active Directory worth the internal Unix strife

Dan Kunetzky, vice president of systems research at International Data Corp., says that Windows 2000 is headed down a successful path.
www.windows2000advantage.com/qa/12-18-00_unix.asp

COLUMNS

Avoid the ostrich approach to security

Amazingly, many companies still take an apathetic approach to security because they don't believe a security disaster will ever happen to them. Columnist Olivier Thierry begs to differ.
www.windows2000advantage.com/columns/01-08-01_security.asp

CASE STUDIES

RadioShack, Starbucks blazing Commerce Server 2000 trail

Before Microsoft's Commerce Server 2000 hit the street, it went through an extended beta testing trial with top-tier companies. Two of them, RadioShack.com and Starbucks used it to accomplish specific e-commerce goals.
www.windows2000advantage.com/case_studies/01-22-01_commerce.asp

MOMENTUM >

Report says Windows 2000 servers featuring 99.964 uptime

Following up on an earlier report that said dot-com users were responding favorably to Microsoft Windows 2000, the Aberdeen Group has issued a new report in which users are certifying high reliability and scalability with their Windows 2000 systems.

For the full story, visit: www.windows2000advantage.com/300

2000 GENERATION >

Microsoft Mobile Information 2001 Server enabling Windows 2000 mobile users to go wireless

In anticipation of high projected wireless mobile Web and e-mail access demand, Microsoft's Mobile Information 2001 Server – which was introduced as part of the .NET enterprise server line – was created with Microsoft Windows 2000 mobile users in mind. Expected to become available during the first half of this year, Mobile Information 2001 Server will offer not only e-mail access, but access to calendaring and other wireless applications such as customer relationship management (CRM) and accounting.

For the full story, visit: www.windows2000advantage.com/2000gen/12-04-00_mobile.asp

Q&A >

Aberdeen Group analyst says Windows 2000 ready for reliability prime time

Tom Manter, research director at the Aberdeen Group, is finding that both dot-com and enterprise computing users are increasingly choosing Windows 2000 over Unix alternatives. Could this mean that Sun is setting?

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MOMENTUM >

Rapid Economic Justification methodology paves way for Windows 2000

To assist IT executives with the challenges of economic justification of their technology proposals, Microsoft offers its Rapid Economic Justification (REJ) framework. According to Microsoft, the purpose of REJ methodology is twofold: to help IT professionals analyze and optimize economic performance of IT investments, and to expedite resources and capital appropriation for IT projects. Thus, IT executives are able to do scenario planning, effectively trying out which investments would make the most business sense for an organization.

"About four years ago, Total Cost of Ownership (TCO) was a key decision factor for IT investments," says Shafeen Charania, Microsoft's director of Business Value Marketing. "Microsoft focused its product development and planning to address TCO, and ensure that Microsoft products provided successively lower TCO."

Then, approximately two years ago, Microsoft began to examine the other side of the technology investment coin, with a lens focused on Total Benefit, or Value of Ownership. "As we started looking at the benefits versus just the costs associated with IT, we began to understand that this is a relatively new area of research, and that most efforts to quantify the benefits of IT involved a great deal of analysis and many months of effort," says Charania. "We felt that it would be a good thing to build a framework that provided a more immediate analysis of the business impact of IT. We engaged academia, industry analysts and worked with customers and partners to develop the REJ framework."

Microsoft's REJ process provides templates for written documentation, and a presentation format for the economic analysis. In all, the REJ framework consists of five steps.

For the full story, visit: www.windows2000advantage.com/momentum/01-15-01_rej.asp

QUOTE OF THE WEEK >

"You can take Commerce Server 2000 out of the box, slap a coat of paint on its pre-built features and make it do what you need to do."

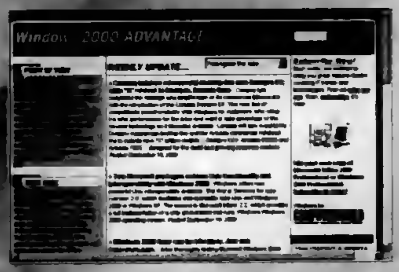
— Rob Reed
manager of Web IT
Starbucks Direct

What is Windows 2000 Advantage?

The mission of Windows 2000 Advantage is to become your primary source of timely, useful information for planning and implementing Microsoft Windows 2000 on Compaq solutions and services.

Windows 2000 Advantage is a Web-only magazine because that lets us bring you, the IT leader, great stories that apply to your day-to-day work. We'll keep you up to date with a weekly e-mail alert so you don't miss a thing.

Windows 2000 Advantage is underwritten by Microsoft and Compaq. Its charter is to address the issues that most concern IT managers charged with keeping their companies on top of the latest and best solutions Microsoft and Compaq have to offer. Toward that goal, we offer a wide range of stories including case studies, columns and news to provide you with information you can't find anywhere else.



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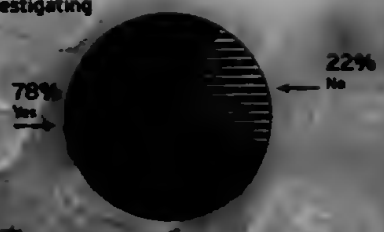

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ENTERPRISE

Two Paths to an MBA

For busy IT professionals who want to earn an MBA, the options are either part time for four years or an intensive executive MBA program. Consider the experiences of two IT pros who took those different routes. **By Jill Vitiello**

As IT departments partner more closely with the businesses they support, an increasing number of IT professionals say they see the advantage of earning an MBA degree. The formal training gives them a leg up in understanding the organization and using technology to make the company better. The degree can propel their careers to the top of IT — and beyond.

Unfortunately, most employed IT professionals don't want to forfeit the momentum or the money that their current career provides. So those who decide to pursue an MBA while continuing to work choose between two hard roads: the part-time MBA, which generally takes four years to complete, and the executive MBA, which can be achieved in two grueling years.

Meet two IT professionals — both of whom expect to earn their MBAs by this spring — and see how they handle the demands of work, family and school through these two approaches to earning an MBA.

The Part-Time Plan

Name: Rashi Rai, senior systems analyst
Company: Merck and Co., Whitehouse Station, N.J.
Current degree program: Part-time MBA at Rutgers Graduate School of Management, New Brunswick, N.J.; began the program in fall 1997
Undergraduate education: Rutgers University, bachelor of science in computer science (major in mathematics, minor in psychology)
Experience: 4.5 years at Merck

"Being in a corporate environment, it's important to have business knowledge," says Rai. "It's not just about finding a solution to the problem anymore; it's about understanding why there is a problem."

With nearly 50 credits of MBA course work under her belt, Rai says she's now able to work with internal clients on projects that involve technical and business process changes.

Rai's MBA concentration is in management innovation and technology, and she hopes to move into a technical management role at Merck. But she recognizes that the degree is no guarantee of success.

"Just because you get your MBA does not mean you are going to be a great manager someday," Rai says. "I'm earning my MBA to learn as much as possible about having the tools to be a good manager, and I'm hoping to be promoted based on my skills."

Since 1997, Rai has commuted approximately one hour from her job to the Rutgers campus two nights each week for three-hour classes. She takes two courses each semester and estimates that she spends another 15 hours each week studying and completing class assignments.

"In the beginning, it was exciting just to be in the program, but I'm hitting 'senioritis' now," Rai says. She says handpicking elective courses geared toward her interests and working with top-notch professors keep her motivated. Rai's husband is also in a part-time MBA program one year behind her, and the two encourage each other.

Rai didn't consider enrolling in an executive MBA program. She knew that as a relatively new employee who's fairly young, she most likely wouldn't qualify for that privilege. Plus, she was in a hurry to get started on the degree.

"A lot of part-time MBA students aren't necessarily looking for a career change," she says. "Instead, we are looking for increased responsibility in the paths we've chosen." Rai is studying for the MBA degree to improve her chances of reaching senior management positions within Merck's IT area. "While I enjoy project management, I am interested in a more strategic leadership role in the future," she says.

"Working full-time and earning the MBA degree part time is not for the faint of heart," says Rai. "You need to know why you are earning your MBA. It's not enough to want the degree. You have to be motivated by the learning and the chance to apply it on your job."

The Executive Track

Name: Christopher P. Ricciuti, principal, IT management consulting
Company: IBM Global Services, New York
Current degree program: Executive master's program at Kellogg Graduate School of Management, Northwestern University, Evanston, Ill.; began the program in August 1999
Undergraduate education: Boston College, bachelor of arts in political science, bachelor of arts in sociology
Experience: Eight years at AT&T Corp.; nearly three years at IBM

"My grandfather, who came to the United States from Italy, taught us, 'Education makes you smarter faster,' " says Ricciuti. "That's exactly what I'm finding in business school. Skills like activity-based costing, which took me three months of experience to learn, took me one lecture at school to understand."

For Ricciuti, "fast" is the operative word. Every other weekend, he boards a plane and flies from New York to Evanston, Ill., where he spends three days with 70 other executives cramming in four courses per semester. Reading and studying take up most of his free time.

Often, Ricciuti and his wife, a TV producer who travels on business, catch separate planes at the airport and don't meet up again for a week or more. But they're supportive of each other's aspirations.

"This schedule has the potential to stress a marriage or make it stronger," says Ricciuti. "My wife and I have to work hard to get time together, and when we do, we focus on each other."

Ricciuti chose Kellogg for its emphasis on team-building and collaboration, two important skills he uses on the job. "The happiest day of my life — other than my wedding day — was when I was accepted at Kellogg," he says.

An IT consultant to Wall Street firms, Ricciuti wants the MBA training to help him provide end-to-end client solutions that include an understanding of all facets of business and not just IT and marketing, which are his areas of expertise. The course work is paying off.

"I literally take material I learned from the weekend and apply it to my work the following Monday," says Ricciuti. Occasionally, his clients will razz him about using business school buzzwords, Ricciuti says. But for the most part, his attendance in the program is a nonissue, even though it takes him off-site one Friday every other week. "My focus at school has helped me to focus better at work — I have less time to get things done," he says.

"This is not an 'MBA lite'; it is a full MBA program," says Ricciuti, who hopes to take on a broader leadership role in his IBM practice once he earns the degree.

Engaging, caring professors make the weekends energizing, and Ricciuti talks on the phone every day with classmates, whom he describes as the brightest, most well-rounded people he has ever met. "When I look around the classroom, I know I'm with the future leaders. Many of these people will one day be the presidents of their companies," he says.

Vitiello is a freelance writer in East Brunswick, N.J.

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Microsegmentation

BY SHARON McDONNELL

THE MORE you know about a customer — age, gender, what he owns, what he spends and what his preferences are — the more likely it is that you can create and pitch a product or service that will hit a bull's-eye. Identifying and interacting with your customers in ever-smaller groups is a tantalizing prospect — and now easier and more cost effective than ever, thanks to the Web and other technological advances that gather, store and sort customer data.

"In the earlier days of market segmentation, some sociodemographic information was known, but it wasn't actionable. Now, it's radically refined into thousands of segments, and it tells you things about class culture, how they behave with their wallets and how to reach them," says Mike Riley, a vice president at Mercer Management Consulting Inc. in New York.

For example, among credit card issuers, Capital One Financial Corp. is a leader in applying information-based marketing that is based on hundreds of variables to identify thousands of customer segments and devise offers tailored to these segments in terms of interest rates, credit limits and interest-free periods, says Riley.

The Falls Church, Va.-based company then tests and evaluates the results, a strategy that has paid off in helping Capital One grab market share from bigger credit card issuers, says Mercer Vice President Nick Winter. While many firms gather data, most don't take time to study the results in detail and make cross-comparisons, he says.

By contrast, Citibank in New York uses traditional "push" segmentation (separating customers by demographic criteria, such as high income), while MBNA Corp. in Wilmington, Del., uses affinity segmentation (segmenting by common interest groups like professional associations and sports teams), a Mercer case study notes. NextCard Inc. in San Francisco uses self-segmentation, allowing customers to configure their own credit cards' terms.

DEFINITION

Microsegmentation is a marketing strategy that narrows and refines a market into ever-smaller segments sharing many common traits — such as people whose household income is more than $100,000 or who bought at least two high-ticket items last year. This helps create tightly focused direct marketing messages to smaller groups of would-be customers.

'Data Nazis'

One of the challenges organizations face in fine-tuning marketing campaigns is that the relationship between a company's IT staffers, who mine the raw data, and the marketing folks, who need it to make informed decisions, is often contentious, experts say.

In some instances where there's a particularly deep rift between these two groups, IT staffers are even regarded by their business counterparts as "data Nazis," says Riley.

"Business unit [staffers] say IT tries to control the process in a way that is unproductive," says Riley. "Instead of 'thou shalt do,' business units want IT to provide a set of standards and analytic tools as a foundation to rely on."

Tom Connellan, a partner at Performance Research Associates Inc., an Orlando-based marketing consultant and coauthor of *e-Service: 24 Ways to Keep Your Customers When the Competition Is a Click Away* (Amacom Books, 2001), says, "The key role for IT staff is looking all the way down the value stream to see who the end customer is out there and how can I work with my internal partners to create value for that customer at the end of the value stream? For some, this is a real mind-shift, because IT is technology-centric, not customer-centric."

Most department stores, along with some mass merchants and specialty retailers, can join customer records across channels if a proprietary retailer credit card is used. For example, Saks Fifth Avenue in New York, a customer of Blue Martini Software Inc., analyzes sales transactions across sales channels on the Saks card.

"But most retailers can't reliably and cost effectively aggregate customers' other purchases if they paid cash or used a major nonstore credit card, unless they ask for the customer's name, address and phone number at checkout to link in-store purchases with online purchases," says Catharine Harding, director of retail solutions at Blue Martini and a former IBM retail consultant.

The Good Guys Inc., a Brisbane, Calif.-based consumer electronics chain with 79 stores on the West Coast, has been moving toward a microsegmentation strategy during the past year. Good Guys previously segmented its customers by how recently and frequently they bought products and how much money they spent — a traditional approach used by most catalog companies.

Now, the company rents lists from list brokers in order to cluster small segments of customers with distinct profiles and buying behaviors — such as luxury home theater buyers and digital camcorder buyers. That allows it to target past buyers with specific messages and prospective buyers who share similar demographics.

Good Guys' extensive cross-channel customer database — tied to names, addresses and phone numbers — is "enriched" with demographic data, which is pulled into pre-defined data formats and ready for immediate reporting and data mining through an integrated process in its Blue Martini data warehouse, says Harding.

Demographic data that fleshes out a clearer picture of the buyer with about 200 common variables — such as whether or not he owns or rents a home, has children or has moved recently — is generated by companies like Acxiom Corp. in Little Rock, Ark., and Experian Information Solutions Inc. in Orange, Calif.

"Once you know a buyer's life stage, you can do a lot of personalized marketing," says Harding. "A retailer may want to offer very attractive incentives to someone with a first baby. If a buyer moves, a consumer electronics retailer may want to pitch a big new TV, appliances and so on."

Once you know a buyer's life stage, you can do a lot of personalized marketing.

CATHARINE HARDING, DIRECTOR OF RETAIL SOLUTIONS, BLUE MARTINI SOFTWARE

Needing Help

Good Guys' sales transaction data is sent to Direct Marketing Technology Inc., a subsidiary of Experian in Chicago that has maintained its relational customer database since 1991. "Our IT head would love to maintain it in-house, but he's acknowledged [that] the marketing people need to have their hands on the data and understands [that] the merge/purge process — deleting duplicates, filling in new or missing data — can't be done without a national firm who can run it through their change-of-address system every month for updates," says Kathy Castle, a marketing manager at Good Guys.

Among the major challenges in measuring the effectiveness of personalized marketing campaigns: It can take years for a customer's behavior patterns to become clear, if at all.

"The hardest thing is that some metrics used to evaluate behavior materialize over a long period of time," says Winter. "Let's say a person uses a credit card a lot and keeps high balances, which sounds like a profitable customer, but [he] eventually switches to another card, or is at risk of default. You don't have the whole picture right away."

McDonnell is a freelance writer in Brooklyn, N.Y. Contact her at Sharonfmc@compuserve.com.

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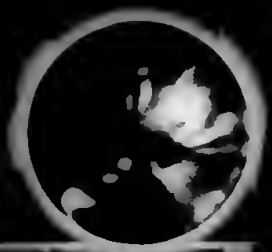

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JOE AUER/DRIVING THE DEAL

Don't Allow Vendor Disappearing Acts

MOST, IF NOT ALL, VENDORS' standard form agreements give the vendor the unilateral right to assign at least part of the responsibilities outlined in the agreement to a third party. This gives vendors incredible performance and financial leverage, and it gives them the ability to delegate responsibilities, cash out of deals or both. Let's be clear on this issue: Never even think about giving your vendor the unilateral right to assign its rights or responsibilities to someone else. Why? There are two very ugly reasons.

The first reason is that the vendor can assign its rights to your payments to a financial institution that loans the vendor most of the value of the contract and then looks to you for the payments. In this case, the vendor has cashed out of the deal, its salespeople have received their bonuses, and you have to worry about how well the vendor will perform while you're still legally obligated to make all payments. The vendor will probably continue to perform, but probably with less motivation, since there's no longer any financial incentive. You've lost the "carrot," and you've assumed the risk of nonperformance, which should belong to the vendor.

In that same vein, never agree to an unconditional obligation to pay your vendor in a results-based deal, especially when your payment obligation is contractually disconnected from the vendor's ongoing duty to perform. Unconditional customer payment obligations are typically triggered by a monthly date or a vendor invoice and continue for a predetermined length of time. Your obligation to pay should be triggered only by the vendor's acceptable performance of the work you have contracted for.

The second ugly reason is that the vendor can assign its responsibilities under the contract to a third party. You could end up having work performed by someone with whom you didn't sign a contract. And again, you could be assuming a performance risk. Please note that this shouldn't be confused with giving the vendor the right to subcontract part of the deal. If the customer understands and agrees up front to subcontracting, there's no problem, especially if the primary vendor remains the single point of accountability. Generally, subcontracting doesn't relieve the primary vendor of its performance responsibilities.

> Subcontracting doesn't relieve the primary vendor of its performance responsibilities.

So, what do you do in a situation in which the vendor wants the right to unilaterally assign its financial interest or responsibilities and escape completely? The best protection is to refuse to allow your vendor to do this under any circumstances. In a case where you have some negotiating power, a vendor will agree but will want to reserve its "right to assign," in case it's bought out or merges with another company. Here again, exercise caution, because you may wind up with a vendor you don't want to be with. This has become a way of life in the software industry, but there are companies on which you just may not want to be dependent for a critical part of your business. Some will take advantage of you and your dependence.

If you have to concede the assignment issue due to a merger or acquisition, allow your vendor to do so only with your consent. This will allow you time to perform due diligence and make sure you're willing to allow assignment of your deal. If you elect to not go with the new vendor, you should have the right to get out of the deal, with all the appropriate protections to allow a smooth transition to a new supplier of your choice.

The bottom line: Make sure you or your legal representatives pay attention to "assignment" clauses, or your vendor could have the right to disappear with a mere stroke of the pen.

JOE AUER is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at joe@dobetterdeals.com.

BRIEFS

UN: IT Boom Ignores Third World Countries

The IT revolution and the job opportunities it brings are leaving vast swaths of the globe behind, according to a report by a United Nations agency on world employment in the information economy. The report, released last week by the Geneva-based International Labor Office, a UN agency that promotes social justice and labor rights, says that increasing numbers of people in poor countries are "technologically disconnected," meaning they are unable to find jobs or gain access to the technologies they need to be productive.

The report predicts that countries and regions that fail to make the technological leap will be unable to profit from the economic efficiency and productivity gains created by technology, and the economic and job growth caused by increases in productivity. The report notes that the key to better global employment is tied to the possibility for continued growth in industrialized countries and developments in a few large developing countries.

Among the report's findings are that about 160 million people worldwide are unemployed and that 500 million new jobs will be needed during the next decade to accommodate new entrants into the job market.

AOL Time Warner Cuts 2,000 Jobs

Just two weeks after getting final approval for its merger, AOL Time Warner Inc. last week announced it will lay off 2,000 employees. The cuts, aimed at reducing overlap between Dulles, Va.-based America Online Inc. and New York-based Time Warner Inc., came from AOL's Internet division, New Line Cinema, Time Inc., Warner Music Group and the parent company's headquarters.

A Taxing Application

Kansas City, Mo.-based financial services firm H&R Block Inc. announced last week that it has hired Dallas-based application service provider Data Return Inc. to host its online tax services. H&R Block will provide enhanced online tax advice and tax preparation services this year in addition to its regular tax preparation services.

ICANN Makes Former University CIO a CEO

The Internet Corporation for Assigned Names and Numbers (ICANN) in Marina del Rey, Calif., announced last week that it has hired M. Stuart Lynn, former CIO for the University of California system, as its new president and CEO. Lynn, 63, will take over for current CEO Michael Roberts in March. His duties will include overseeing the organization's controversial push to add seven top-level domain names to current domain suffixes, which include .com, .org and .edu.

Roberts has been ICANN's CEO since the organization was founded in late 1998.

Stanford Medical Students Get Palms

San Carlos, Calif.-based ePocrates Inc., which provides handheld-based physician reference guides, announced last week that it will offer Palm Vx handheld devices at a discount to medical students and staff at the Stanford University School of Medicine. The handheld computers will include the drug reference application qRx, which allows physicians to check drug interactions, pricing information and product recall information in real time. It also lets physicians update data on their Palm in real time.

WorldWise Provides Global Guidance

For companies that have yet to plan their globalization strategies, WorldWise (*www.idiominc.com/worldwise/welcome2.asp*) offers a free online assessment of a company's readiness to go global. Users register and complete forms on the site with specifics about their businesses, then WorldWise calculates where the businesses are on a globalization readiness scale. WorldWise is run by Idiom Technologies Inc., a Waltham, Mass.-based globalization consultancy and software company.

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TECHNOLOGY

SEARCH FOR PERFORMANCE

StaplesLink.com, the business-to-business e-commerce Web site run by office-supply retail chain Staples, faced a hardware capacity problem after its sales quadrupled to $450 million last year. Suspecting an increase in searches to be the cause of the problem, the company replaced the site's search infrastructure. ▸ 56

STORAGE COMES TOGETHER

At the SAN Solutions 2001 conference, some technology managers said they're looking for vendors to follow through on promises to enable interoperability through "storage virtualization" — the seamless use of devices from different storage vendors. ▸ 56

SECURITY JOURNAL

As 19 vendors and the government launch an initiative to share security vulnerability information, Jude Thaddeus ponders the benefits for corporate security managers and wonders why more user organizations don't get involved. ▸ 56

EXEC TECH

Reviews editor Russell Kay offers a cautionary tale for road warriors about knowing their equipment and its limitations before they leave on the next business trip. ▸ 60

BROADBAND FOR BUSINESS

Price and access are diminishing as factors in the decision to use broadband, but are the new options really ready for the enterprise? The short answer is that the technologies and the vendor infrastructures are still works in progress, but the potential of broadband for scattered and mobile workforces is enormous. ▸ 64

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EMERGING COMPANIES

Start-up Webango Inc. says its services for request-for-proposal creation and bid analysis reduce procurement costs and can save users time. Now it must build its customer list. ▸ 67

IT TRAINING

Web-based training may be cheap and simple, but most IT professionals lack either the self-discipline or the learning style necessary for many technology training needs. Advanced training and hands-on labs still work best in a classroom, say IT managers and students. ▸ 68

AN END TO MIXED MESSAGES

WHILE UNIFIED MESSAGING (UM) systems have been hyped for years, it finally looks as though the technology is showing enough maturity for widespread corporate deployment. Companies are employing various strategies to negotiate UM's biggest roadblock — integration — and now the technology is being implemented to increase employee productivity, cut IT costs and streamline operations.

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BRIEFS

IBM Integrates LSI's Technology Into Chips

IBM will integrate LSI Logic Corp.'s digital signal processing (DSP) technology into future IBM custom chip products, as part of an agreement between the two companies announced last week. Under the agreement, IBM has licensed Milpitas, Calif.-based LSI Logic's ZSP0400 DSP core as well as software development and design verification tools that it will use in developing future IBM application-specific integrated circuit technology.

Microsoft Launches Programming Tool

Microsoft Corp. has released a programming tool, Visual Studio for Applications, that aims to make it easier to customize prebuilt applications, according to the company. The new tool plugs into Microsoft's .Net initiative and is slated to ship along with Visual Studio .Net in the second half of this year.

Linux Tool Used for IBM Cash Registers

New Linux-based software, called Liberator, is being offered for IBM point-of-sale cash register terminals by Fujitsu ICL Systems Inc. in Dallas, which will run existing industry-leading IBM 4690 software applications on the computerized registers.

Liberator, which will be available in March of a cost of about $250 per terminal, adds graphical user interface capabilities and remote program-loading features.

MetiLinx Offers Net Optimization Product

MetiLinx Inc. in San Mateo, Calif., has released iSystem Enterprise, an automated multitier network system optimization application that is compatible with Linux, Unix and Microsoft's Windows NT and 2000. iSystem allows remote network administration and offers automatic corrections an problems are detected. Those features increase reliability and scalability, the company said.

Searching for Staples Just Got a Lot Faster

B2B office-supply site StaplesLink.com updates search engine

BY LEE COPELANO

IF THERE'S one factor that has the capacity to both frustrate customers and thwart online sales, it's a poorly functioning search engine.

That problem confronted StaplesLink.com, the business-to-business e-commerce site run by Framingham, Mass.-based office-supply retail chaio Staples Inc. Because a homegrown search engine was too slow at processing queries, searches were using close to 60% of the site's hardware capacity, said Garn Evans, director of IS at StaplesLink.

"Search has been a focus of a few projects within the last few years," Evans said. "In the e-commerce world, if a search is not returning the correct results, it makes a significant difference in customer satisfaction. And if you don't have the search capability that coosumers are looking for, they tend not to come back."

StaplesLink wanted to avoid that oo its online e-commerce sites, which generated $450 millioo in reveoue last year, up more than 400% from $94 million in 1999.

But paired with the dramatic rise in sales was the hardware utilization increase that meant less power to process orders. As the site grew, the search engine couldo't handle the higher number of concurreot users. Searches were taking about 10 seconds.

The Less-Costly Choice

To ease the hardware burden, Evans could have boosted overall site capacity with site server memory upgrades and additional databases, or he could have replaced the search engine. He chose to do the latter and to off-load the search functionality to its own server. The other choice, equipping the site with new servers and databases, would have cost two to three times as much.

Evans added a oew multithreaded commercial search engine to the business-to-business site, and then off-loaded those tasks onto a separate Unix IBM server. He also used IBM's MQSeries to synchronize the search requests between the Web and Unix servers, which allows searches to run concurrently, he explained. Integrating MQSeries' messaging capabilities also allowed the search engine to connect with other business applications.

The changes should cut searches down to 5 seconds or less, Evans said.

"The benefit was that we continued to stay ahead of our capacity plan," said Evans. "If we grow another 400%, we don't have to add new Web servers. Instead, it becomes a set of building blocks, and I just add the piece that I need."

Bernie Malooson, product marketing manager at Covisint LLC, the massive automotive B2B exchange launched by the Big Three automakers last February, said integrating a search engine into an online site with a large oumber of items in its catalog can be tricky.

"There is nothing worse than typing in a search and getting extraneous data and having to execute another one," said Malonson. That's because the search engine is linked to a database, which could contain thousands upoo thousands of unique items.

Storage Users Endorse Push On Standards

BY LUCAS MEARIAN

Robert Holtz, who manages the data center at Kohler, Wis.-based manufacturing conglomerate Kohler Co., hopes installing a storage-area network (SAN) will let him create tape backups without disrupting his company's oormal course of back-office operations.

Martin Dunlea, global IT director at Tewksbury, Mass.-based Avid Technology Inc., wants to upgrade his SAN by removing single points of failure, adding clustering capabilities and installing new middleware that can control all the storage devices on the network.

"Ultimately, I see it as an excellent step oo the road to disaster recovery," said Dunlea, whose company makes video and audio editing tools for use in the production of movies, TV shows and music videos.

Holtz and Dunlea may have different goals, but both said the message out of the SAN Solutions 2001 conference in Phoenix earlier this mooth was a more positive one than they had heard in the past.

During the event, officials of multiple vendors acknowledged that they have to work together to create interoperability standards for what are now disparate storage systems.

One result of a lack of cooperatioo among vendors is that security is almost nonexistent in storage installations, said Hubert Yoshida, a vice president at Hitachi Data Systems Corp. in Santa Clara, Calif.

As technology becomes more complex, CIOs care less about the guts of their storage infrastructure and more about the ease with which it runs and their companies' return on investment, Yoshida said. More and more, he added, those investments are being eaten up by network management costs, as opposed to the purchase of raw-data storage capacity.

Holtz said his big concern is that, while different storage vendors may make claims of interoperability, he's not ready to bet his job on such promises.

"You'd really love for it to be any-to-any [storage] technology, but that doesn't seem to be here right now," he said.

Interoperability standards are expected to support storage virtualization — the ability for users to pool together physical storage on devices made by different vendors.

"We believe virtualization is the next technology block to watch over the next 18 months," said Steve Duplessie, an analyst at Enterprise Storage Group Inc. in Milford, Mass.

AT A GLANCE

Virtues of Virtualization

- Increased interoperability between different types of storage devices from different vendors
- Lower network management costs, which lead to greater return on investment for storage networks
- Increased security for stored data

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Bringing Security Issues Out of the Closet

If vendors can agree to share security vulnerability information, why can't corporations do the same?

WELL, IT'S GOOD TO see that big business hangs on my every word. A few issues back, I suggested that competing companies should cooperate on sharing information relating to IT security problems. After all, a closed-mouth response to a security breach simply gives the perpetrators a cloak of secrecy that they can exploit to repeat the same attack on your corporate neighbors.

Well, it appears now that 19 companies — including Microsoft Corp., AT&T Corp., Cisco Systems Inc., IBM, Intel Corp., KPMG International, Nortel Networks Corp., Oracle Corp. and Internet Security Systems Inc. — have announced that they're joining with the U.S. government to "share sensitive information about cyberattacks and vulnerabilities in their software and hardware products," according to an announcement I received. Of course, they're all vendors — I was talking about user organizations forming an alliance — but this is a good start. Even the Arlington, Va.-based Information Technology Association of America has joined the alliance.

Security Manager's Journal

How did this happen? I can see it now — Bill Gates sitting around at home scanning *Computerworld* in his copious free time, when he suddenly comes across my column. He reads it, a light dawns, he instantly sees how right I am, he rings up his team of executives and says, "Make it so." Cynics among you might say that this is all in response to the directive to improve infrastructure protection that former President Clinton issued three years ago, but hey, I like a good conspiracy theory as much as anyone else.

The alliance says it hopes to accomplish its goals by creating Information Sharing and Analysis Centers (ISAC) that establish lines of communication between government agencies and these vendors. The program, called IT ISAC, is basically just a private mailing list. Sure, there's a bit more to it than that if you want to get into the details, but at heart, it's just a closed group of people who can discuss their security problems in private.

At the moment, when hardware or software vulnerabilities are discovered, they tend to get posted to public forums on the Web like the CERT Coordination Center or BugTraq, and there's a long-standing ethical debate about when and how these forums should publish details of vulnerabilities. Should they delay publication to allow the vendors time to respond, or should they publish immediately on the grounds that system administrators everywhere have a right to know?

That argument has been raging for years, at least since the Internet Worm in 1988, which affected 10% of all systems on the Internet. The Internet Worm was a precursor of the recent Melissa and "Love Letter" worms that brought the young Internet to its knees for a few days long before most people had even heard of the Internet.

Most accounts of the incident mention the different responses of institutions. Some organizations immediately disconnected their local systems from the Internet to stop the problem from recurring; some stayed online and shared information on the worm and how to stop it. Each strategy worked well for some institutions and not so well for others.

Now, I have no idea which of these two camps are right. I'm not even sure which is better for me. Sure, publication gives us a short-term risk, but in the long term, it probably makes us more secure. The idea of trying to guard against risks by trying to keep their very existence secret — otherwise known as "security through obscurity" — worries me. As Alcoholics Anonymous will tell you, the first step toward dealing with a problem is admitting that you have a problem.

I know which way our antivirus software vendor, Tokyo-based Trend Micro Inc., thinks. In fact, the company immediately alerted us to a vulnerability we had via BugTraq. Trend Micro seems to be taking the view that publication is unavoidable, so it needs to publicize a defense that is equally as strong. That gives me some respect for the vendor and makes me think that it's serious about facing up to its problems.

A Matter of Culture

The IT ISAC isn't even that new. It's based on the already existing financial services (FC) ISAC. The FS ISAC gathers and disseminates information on security threats and vulnerabilities but focuses on the financial services industry. In fact, it has been operating for more than a year now and guards details of its membership and services quite jealously, by all accounts. However, the very fact that the IT ISAC is starting up, and with such prominent names supporting it, is a good indication that the FS ISAC is at least perceived to do a good job.

The question is, would my employer join something like this? I'm quite prepared to turn evangelist again and preach the case for joining to everyone who needs to know, but I'm going to face some cultural problems.

In fact, I'm already a member of a group similar to the IT ISAC, though it's much less formal and almost certainly much less efficient at sharing information than the IT ISAC. I've found that while my colleagues tend to be willing to discuss their security problems face-to-face, there's a marked unwillingness to put anything down on paper.

That's the attitude I'm likely to face if I propose membership to the IT ISAC: While we're reasonably happy to cooperate and share information with our peers, putting things on paper or storing records in a database can come back to bite us long after they were written — just ask Oliver North. No matter how much use you get out of cooperation, the perceived risk is often far greater than is really justifiable. We'll see.

Now, back to more pressing issues. One thing I've moaned about at great length in this column is the level of support we've been getting from our antivirus vendor, Cupertino, Calif.-based Symantec Corp. for our Norton antivirus software. I'm glad to say things seem to be changing. We let Symantec know just how unhappy we were with the level of service from their customer support line in Europe, and they assigned us an account manager to look into it. Since then, we've had no problems, and the service level seems to be improving. In fact, we put the company to a (perhaps a bit unfair) test the other day — we rang its support line with a rather confused report of a new virus and asked if it was a real problem. Despite telling the support representative the wrong name (we called it the Dalai Lama, when it was actually called Davinia), the representative identified exactly which virus we meant, gave us the information we needed and corrected our naming tactfully.

That's far from being an accurate test of service level, of course, but it's certainly a start. It will still take some time to rebuild staff confidence, but if Symantec can continue to give us support at that level, then they'll have pulled off quite a turnaround. And hopefully, I'll be able to focus more of my time on new projects this year. ▶

LINKS:

www.symantec.com: Symantec Corp.'s Web site includes information on Norton AntiVirus software.

www.itaa.org: The Information Technology Association of America's home page carries a full story on the IT ISAC initiative.

www.cert.org: The CERT Coordination Center disseminates information on security threats. Part of Carnegie Mellon University in Pittsburgh, CERT was started by the Defense Advanced Research Projects Agency, which is part of the U.S. Department of Defense, in 1988 after the now-famous Internet Worm incident.

www.anti-online.com: BugTraq is a security vulnerability database that users can access via this Web site or e-mail newsletters. The site is run by SecurityFocus.com, a commercial security information services firm in San Mateo, Calif.

www.fsisac.com: The financial services ISAC Web site gathers and disseminates information on security threats and vulnerabilities in the financial services industry, but much of the information is useful for any security manager.

■ This journal is written by a real security manager, whose name and employer have been disguised for obvious reasons. It's posted weekly at *www.computerworld.com* to help you and our security manager – let's call him Jude Thaddeus – better solve security problems. Contact Jude at jude.t@fycos.com or click on *Computerworld.com*'s Security Watch community forum to participate in discussion topics.

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A Trip of Trip-ups

A cautionary tale about knowing your equipment. By Russell Kay

IN PREPARING for my recent trip to Las Vegas for the International Consumer Electronics Show (Technology, Jan. 22), I planned to take along a new laptop that was slated for review. My kit bag for this trip also included a digital camera. Never did I foresee the trouble and anxiety that would be created by equipment problems, and I'm sharing the experience so that you might be able to avoid the same distress.

First, a word about the computer. Like many of the systems I review, this unit had a label on the bottom declaring it an "engineering sample — not to be sold." Normally, this means that the unit hasn't yet gotten its Federal Communications Commission certification for radio frequency emissions and that some detail of the unit isn't final — often the color of the case or the texture of the plastic. In other words, this isn't quite the final product, but it's pretty close. Since the problems I encountered are unlikely to happen to those who purchase the final unit, I won't identify the vendor or model here.

During the week before the show, I gradually got the laptop configured with all the applications and data I might need for sending back stories from the show. I had no problems until, with about 12 hours to go before my ride to the airport, I installed one last program, and the notebook died. It absolutely refused to reboot.

Oh, a couple of lights came on, and it made some hopeful fanlike noises for a few seconds. Then, nothing. I reset the unit several times, changed the battery, pressed every key combination I could think of that might do something and plugged and unplugged everything. Still no computing, and the clock kept ticking away.

So I hurriedly packed my standard-issue 6-lb. Dell Latitude. I was rushed, so it was hardly surprising that when I arrived in Las Vegas I discovered that I had packed my Zip drive but not its cable and floppy drive. To cap things off, the Dell's PC Card modem had also died. I quickly found a store where I bought another modem, but then I decided that I would just have to hope that I wouldn't need the floppy or Zip drives. Finally, I was geared up for writing and filing my report. Or so I thought.

THIS BUSINESS TRIP'S EQUIPMENT PROBLEMS were [illegible] too many devices that need power to recharge their batteries. The power [illegible] include laptop, USB hub, cell phone, camera battery charger and optical [illegible]

Get the Picture?

Remember the digital camera? The model I was carrying used SmartMedia for recording its photos. I did remember to take along my New Media Technology Corp. Universal Serial Bus (USB) FilmReader for SmartMedia, and I had even remembered to test it at home to make sure it worked.

But Murphy's law was still operating. Anticipating that I would take a lot of pictures, I had a new 64MB SmartMedia card, courtesy of SanDisk Corp. in Sunnyvale, Calif. And indeed, that first day at the show, I took almost 50 pictures. I went back to my hotel to download them and write up the first part of my report. I took the memory card out of the camera and put it in the reader. The reader didn't see any files; in fact, it didn't even recognize that there was a card there. I tried turning the card over, thinking perhaps I'd put it in backwards. Still no files. It dawned on me that I had originally used the reader with 8MB and 16MB cards, but I had never tried it with a 64MB unit.

The next morning at the show, I sought out the first memory vendor I could find, Fremont, Calif.-based Lexar Media Inc., and threw myself on its mercy, asking for help. The vendor gave me a brand-new reader called Jumpshot, which was also labeled an "engineering sample." That night, after having taken another 40 or so photos, I installed the software for the new reader. I gingerly removed the SmartMedia card and placed it in the reader. Nothing. I took the card out again, turned it over — and (cue the drumroll) I could finally see my photos.

Too Much USB?

The Dell laptop has a single USB port. The mouse I had brought along was USB. (Need I say that I hadn't remembered the USB-to-PS/2 adapter?) So to connect the card reader, I had to unplug the mouse and use the laptop's built-in touch pad, which I hate. But I had the answer to that — a tiny Targus Inc. four-port USB hub that's great for traveling.

Wrong answer. The mouse was an optical device, used an LED and drew too much current. The hub needed an additional power supply that I didn't have. I tried using the power brick from my cell phone — it had the right voltage and current but the wrong-size plug. As I've learned, it's all too possible to have four or five different 5V adapters that would be interchangeable except for their plugs. I really wonder why there can't be more standardization here.

I unplugged the mouse and hub, plugged the card reader directly in to the laptop and I was in business. All of my photos were safely there, and I downloaded them quickly. USB is a great, fast way to download big photo files from a camera or card reader.

For the rest of the show, I kept waiting for something else to go wrong, but evidently Murphy had taken the rest of the week off. The remainder of the trip was thankfully uneventful. The day after I returned from Las Vegas, however, I was in an auto accident that totaled my car — but that's another story.

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GETTING MESSAGING TOGETH

Corporate users are finally being persuaded that unified messaging can cut costs and streamline communications. By Drew Robb

EACH MORNING, Kelly Walls spends 45 minutes driving through Atlanta traffic to his job as CIO at Royal Specialty Underwriting Inc. (RSUI), a liability, casualty and special-property underwriting firm. But instead of considering the commute dead time or, at best, a chance to make a few business calls, Walls spends the time zeroing out his e-mail, fax and phone messages. "I receive 75 to 80 messages a day, so it's good to arrive with a clean in-box," says Walls. "I can immediately engage in productive work rather than playing catch-up with messages."

Like thousands of other companies, RSUI uses a unified messaging (UM) system to provide employees with one source for all business-related communications. While such systems have been hyped for years, it finally looks as though the technology is showing enough maturity for widespread deployment. Companies are employing various strategies to negotiate UM's biggest roadblock — integration — and now the technology is being implemented to increase productivity, cut IT costs and streamline operations.

Essentially, UM provides a universal mailbox for

THERE IS NO DOUBT that unified messaging saves time on administration and messaging, says Bob Brumm, a senior telecommunications specialist at Teco Energy.

voice, e-mail and fax communications. Users can manage, review or respond to messages using a PC, wired telephone, wireless phone or handheld computer, regardless of the type of device used to create the original message.

But until recently, the corporate world hasn't been scurrying to implemeot UM. The Pelorus Group, a market research firm in Raritan, N.J., that specializes in the telecommunications industry, counted 9,000 UM system sales in 1999 and a total of 556,000 seats.

"The problem is getting unified messaging systems to interwork with the rest of the messaging infrastructure," says Roger Walton, an associate analyst at Boston-based Ovum Inc.

In its early days, an absence of standards and the explosion of proprietary voice-mail and e-mail systems severely limited the deployment of UM. Nowadays, however, Microsoft Corp. claims 68 million e-mail seats and Lotus Development Corp. claims more than 75 million. Avaya Inc. in Basking Ridge, N.J., boasts 120 million installed voice-mail boxes, and Brampton, Ontario-based Nortel Networks Corp. claims that its CallPilot private branch exchange (PBX) system integrates with 80% of existing PBXs. While this may not resolve all integratioo issues, it appears to be less of a problem now.

Further improving the interoperability equation is Voice Profile for Internet Mail (VPIM). VPIM is a standard profile of SMTP/MIME that allows the interchange of voice, fax and e-mail messages among messaging systems. This standard specifies how messages are exchanged between mail servers — not how these servers interact with client applications or the way they interface with the end user. In effect, VPIM resolves long-standing difficulties in transporting messages between disparate voice-mail systems and enables inexpensive transport via TCP/IP over the Web. What does this mean to the end user?

"There is no doubt that unified messaging saves time oo administration and messaging," says Bob Brumm, a senior telecommunications specialist at Teco Energy Inc., a Tampa, Fla.-based holding company for a group of energy-related businesses, including Tampa Electric Co. and Peoples Gas Systems.

Teco has two years of experience with UM. More than 2,550 Teco employees use Nortel's CallPilot as a single window into multiple messaging platforms. CallPilot is basically a server-based voice mail system with added modules, depending on needs. Customers can, for example, view fax/e-mail messages via e-mail, scroll through voice messages on a cell phone or forward faxes to specified numbers.

According to Dave Moore, director of advanced applications at Nortel Networks, CallPilot integrates with any PBX from Nortel, Lucent Technologies inc., Siemens Corp. or Mitel Corp. It also functions with e-mail clients such as Microsoft Exchange, Outlook, Lotus Notes, Netscape Messenger and Eudora Pro.

Brumm says one Windows NT server can handle 20,000 CallPilot boxes. He estimates the cost of deployment for voice mail and UM at around $200,000 per server. Moore estimates $200 to $1,000 per user, depending on the size of the site and the range of services.

When Teco first implemented UM, it experienced some integration problems. For one thing, the company's previous voice-mail system, from Lucent Technologies in Murray Hill, N.J., didn't integrate with its network of Nortel switching systems. Consequently, Teco changed to a Nortel PBX. Further, CallPilot initially couldn't interact with the company's Novell GroupWise e-mail system, but Teco went ahead, having been promised greater functionality on future releases.

Brumm says his Open Database Connectivity-compliant UM system has few integration issues. Users can log on via a desktop system or laptop to read voice mail, e-mail messages and faxes. Via cell phone, users receive voice mail and are informed about faxes or e-mail.

Ease of installation is a further sign of UM maturity. Brumm reports that it took one day to install a new CallPilot server and five minutes per user to load the application on the client side.

PIGGYBACKING EXCHANGE

Avaya takes another approach to minimizing integratioo hassles: piggybacking unified messaging on the Microsoft Exchange platform. RSUI, for example, has 170 users on Avaya's Unified Messenger for Microsoft Exchange. Its text-to-voice function means that e-mail and fax can be heard via cell phone.

"As underwriters live and die by messaging, the system definitely saves users a significant amount of time each day," says Walls. "And as far as maintenance goes, unified messaging is almost invisible."

With the arrival of Exchange 2000, Windows-based UM may be in a position to challenge the traditional reliability of voice-mail servers. According to Marty Parker, Avaya's vice president of strategy, the combination of Windows 2000, Exchange 2000 and VPIM makes UM far more attractive. As UM supports Active Directory and Microsoft Management Console, administrators have a single interface for voice and e-mail. If an employee's name changes, for instance, one Active Directory update handles both voice mail and e-mail.

Unlike the situation a couple of years ago, Exchange users now have an easy task setting up UM. It took RSUI several weeks for its first UM installation, for example, while two recent installations in remote offices took only one day. Walls also recommends spending about 30 minutes per user on system education to maximize return. The cost? RSUI's most recent installations came to about $75 per seat for software and around $50 to $70 per seat for implementation and training. For larger enterprises, add another $100 per seat for additional servers, says Parker.

HOSTED MESSAGING

In addition to server-based systems, UM comes in another distinct flavor: subscription-based messaging. Subscription-based messaging follows the application service provider model, providing services via a browser. But why outsource messaging?

"It's just too much hassle to hook it all up ourselves," says Charles Whitener, national sales director at Albuqoerque, N.M.-based Primerica Financial Services, a subsidiary of Citigroup Inc. "We prefer to focus oo our core competencies, not IT."

Primerica uses Orchestrate 2000, a UM system from Orchestrate.com, a division of Voicecom, which is a subsidiary of Ptek Holdings Inc. in Atlanta. Whitener estimates that Primerica has 70,000 users onVoicecom's Voice-Tel voice-mail system, 10% of whom use Orchestrate. Whitener says he's particularly pleased with how it helps employees stay connected while on the move.

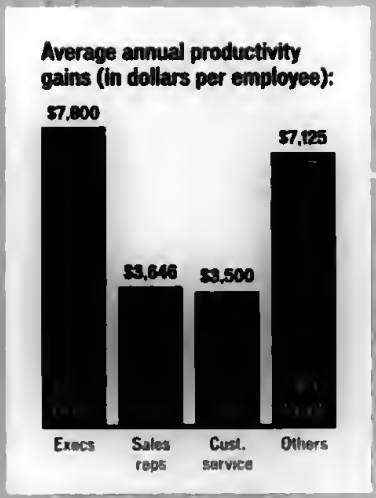
As a sales manager, Whitener uses UM to send group e-mails and faxes and to make conference calls. Like some server-based systems, Orchestrate 2000 comes equipped with text-to-speech capabilities, allowing Whitener to spend 90 minutes each day in the car answering e-mail, faxes and voice mail. All it takes is a short phone call to add new users to the network. Whitener estimates a total time savings of two hours per day.

Until now, most UM users have fit the small office/home office profile or represented small units within large companies. But within a few months, hosted UM will be ready for large-scale, corporate deployments due to upcoming releases such as calendar/contact/handheld synchrooization, Wireless Application Protocol access and mail-client support.

"Look down the road a year or two, and unified messaging becomes a must-have," says Brumm.

Robb is a freelance writer in Tujunga, Calif.

Unified Messaging: ROI



Although research firm Ovum placed total UM revenue at only $300 million for 1999, it predicts an explosion to about $4 billion within five years, with three-quarters of all businesses using UM. Why? Simply put, UM shaves valuable minutes off time spent daily on messaging and IT support. When a company crunches the numbers, UM becomes difficult to resist.

For instance, one study by The Radicati Group Inc., a consulting and market research firm in Palo Alto, Calif., found that support for UM averaged $208 per user, compared with $708 per user in companies administering separate e-mail, voice-mail and fax systems. Furthermore, users saved anywhere from 25 to 38 minutes per day as a direct result of more efficient message handling.

Building Broadband Into Busi

Providers scramble to provide service levels fit for enterprise users. By Tony Baer

LIKE ANY COMPANY WITH DOZENS OF SMALL branch offices, Norman, Okla.-based McSha Properties Inc. was limited to communication by phone or e-mail via modem. When Atlanta-based Cox Communications Inc., the local cable provider, gained 70% market penetration in Oklahoma, the coast was clear for the developer and property manager to finally get broadband out to 25 of its 30 sites.

The company's experience is a prime example of how the emergence of new broadband technologies, such as cable modem, Digital Subscriber Line (DSL) and two-way satellite, is finally making broadband possible — and affordable — for remote branches and telecommuters. For McSha, the price will be $89 per month to service each two- to three-person site, a fraction of what T1 or frame relay would cost, says Andrew Carlson, McSha's vice president and CIO.

For that price, many companies can now afford to have enterprise applications spread much farther out into their enterprises, and telecommuting may become a more practical option for more workers. For McSha, cheap, ubiquitous broadband means PCs located at small sites hundreds of miles from headquarters could be centrally managed using NetMeeting and other Windows 2000 technologies.

While the price may finally be right to get broadband out where it couldn't go before, some big questions remain: Has broadband technology stabilized to the point of being safe for business deployment? Are providers ready to offer business-class service levels? And most important, is it available everywhere that businesses need it? The short answer is that the technologies and the vendor infrastructure are still works in progress. Not only is the infrastructure incomplete, but in many cases, commercial enterprises are having a hard time getting service because many providers are targeting residential customers first.

Spotty but Expanding Coverage

Broadband options for business have traditionally consisted of T1 or frame-relay lines, which cost up to $1,500 per month. Capacities ranging from 256K bit/sec. to 1.5M bit/sec., which could be cost-justified only for large offices with hundreds of people, cost $1,500 per month and up.

By contrast, cable and DSL alternatives promising speeds from 256K bit/sec. to Ethernet-like 10M bit/sec. are becoming available for prices ranging from $50 to $200 per month for residences and businesses, based on bandwidth and whether the connection is equally fast in both directions. Meanwhile, new two-way broadband satellite access promises uplinks at up to about 1M bit/sec. to remote regions. Each broadband technology provides different access methods, bandwidth choices and security concerns.

But availability remains spotty. Nationally, suburban areas have generally gotten the head start on broadband because construction costs are lower than in downtown areas and the potential market is more lucrative than in rural areas. The cable industry, which hopped on the broadband bandwagon first, is roughly halfway through the job of rewiring its service areas, according to Gartner Group Inc. in Stamford, Conn.

Coverage areas further complicate the picture. For instance, although the cable industry is rapidly consolidating, service providers ofteo vary by town. Wheo New York-based investment firm Merrill Lynch & Co. began its first large-scale telecommuter broadband program to serve its central New Jersey offices, it partnered with Comcast, the area's largest cable provider for remote access. Yet only half of Merrill's local telecommuter base fell within the Comcast service area.

Choosing a DSL service provider can be confusing. Local telecommunications companies — which own the last-mile connections between long-distance lines and homes or offices — are the logical candidates, but while some have built out their DSL capabilities aggressively, others haven't.

Then there's the new breed of so-called competitive local exchange carrier DSL providers, such as Covad Communications Group Inc. in Santa Clara, Calif., NorthPoint Communications Group Inc. in San Francisco and Rhythms NetConnections Inc. in Englewood, Colo., whose share prices and financial stability have gone south due to the up-front costs of building thousands of local switching facilities nationwide. Last but not least are the established national long-distance providers, which are still literally piecing together national rollout strategies.

With all of these uncertain options, the risk of making a wrong choice is real.

"You may have to worry about picking winners," says Beth Gage, a vice president at TeleChoice Inc., a telecommunications market research firm based in Tulsa, Okla.

The bottom line is that one-stop shopping for broadband isn't likely. "There is never going to he one solution that goes everywhere," says Alexander Winogradoff, an analyst at Gartner's Dataquest.

Masoo Rotelli, CIO at cabling supplier Communications Supply Corp. in Carol Stream, Ill., agrees. The company is using Sprint Corp.'s new ION bundled services program to add T1 access to many of its 28 regional offices, but Rotelli says he views DSL as promising for telecommuters or smaller offices.

"We will look seriously at Sprint DSL options because I would like to roll them into my corporate bill," he says. "I think it will be a long cycle, however, before DSL is provided ubiquitously."

What Businesses Really Want

Businesses don't like to share networks, and they don't want to wait in line behind dozens of consumer calls to get problems fixed. And in most cases, businesses need service levels that they can count on. The network must deliver specified levels of availability, problems must be resolved within a definite time period, and bandwidth must be guaranteed. Requiremeots are usually higher when a branch office, rather than a telecommuter, is involved, because branches house more people.

In cootrast, most of the new broadband alternatives, including cable, DSL and satellite, are still delivered on a "best-effort" basis, and not all providers have yet set up the dedicated teams for commercial customers that business-grade service may demand. Furthermore, there are real technology limitations. For instance, the shared nature of cable means bandwidth and message delivery can't be guaranteed.

Business-grade systems are coming slowly but surely. Some cable and DSL providers are adding special business service tiers that dedicate separate installation, service and support teams for business customers. In some cases, they may add new LAN integration or application service provider services that go beyond the modem, the traditional edge of coverage. And some technology innovations, such as the emerging Data Over Cable Services Interface Specification for cable broadband service, will let cable providers reserve bandwidth for premium customers and thus start selling guaranteed service levels.

While many of these service bundles target small to midsize businesses that lack their own IT support staffs, larger enterprises are keeping control of managing their own networks and supporting their own users. For instance, Merrill Lynch continues to manage its own networks, issuing each telecommuter a standard package of hardware and software. It also handles technical support calls during business hours, redirecting off-hours calls to the normal Comcast residential support queues.

The degree to which broadband in new locations affects LAN and Web infrastructures often depends on whether there was one in the first place.

At Merrill Lynch, the core infrastructure was hardly affected because adding telecommuters was simply a matter of accommodating the same users from different access points. Cable modem clients are connected to the Merrill Lynch network via a virtual private network (VPN), bypassing the cable company's Internet server. Security is managed through use of the VPN and corporate standards dictating hardware and software configurations on Windows NT platforms. Merrill Lynch is also considering adding personal firewalls and encryption.

At McSha Properties, the installation of cable broadband service prompted a monumental upgrade of the primitive internal infrastructure. "We ended up doing a cable and [Windows 2000] machine upgrade concurrently because there was such a synergy between the two," says Carlson, listing benefits such as in-the-box VPN and encryption support and the ability to remotely manage client desktops.

Similarly, the installation of high-speed satellite downlinks prompted the Modoc, Calif.-based Joint Unified School District, which serves a remote California county, to expand its Novell LAN environment to 300 desktops.

And at Alamosa, Colo.-based El Telar, an e-mail and Internet service provider affiliated with the regional economic development agency, the installation of high-speed satellite connections provided the impetus to bring the hosting of its Web site and e-mail server in-house. That created a need for a firewall and several Windows 2000 and BSD Unix servers.

The impact of broadband may depend on user behavior. At the University of Cincinnati, which added broadband DSL and cable modem access for telecommuters to supplement 650-line modem banks, so far, faculty and staff rather than students have been using the broadband access.

For the most part, this group's usage patterns have remained bandwidth-friendly, involving transaction applications and research-oriented document retrieval. If more users take advantage of broadband access, the university might have to ration bandwidth, says Fred Siff, the university's CIO. Before the school shut off Napster access last spring, the music service hogged half of the bandwidth on the modems.

"We already have an OC-12 ring around campus, and we don't expect to expand that anytime soon," Siff says.

Shakeouts

With the cable, DSL and satellite industries just starting to get serious about business services, ramp-up problems have perhaps been inevitable. At El Telar, it took several months to diagnose a faulty router in its satellite transceiver and then get the replacement properly configured. Modoc had to tweak its Novell proxy server.

As one of Cox Business Services' earliest customers in the Oklahoma City area, McSha initially encountered problems finding knowledgeable support staff, recalls Carlson. Additionally, just after Cox acquired a rival system in the area, there were intermittent router problems.

In some cases, the hurdles may be application-oriented. Bob Evans Farms Inc. in Columbus, Ohio, is upgrading its 450 restaurants to faster, IP-based asymmetric satellite links to integrate inventory management. To do this, the company needs to reconfigure its Lotus Notes replicatioo features, which would otherwise tend to clutter the transmissions with lots of background low-level communications.

The bottom line is that cable, DSL and satellite broadband are undergoing the shakedowns that are typical of any emerging technology.

"Cox hasn't been 100% [available]," says Carlson. "But you have to ask yourself, Is your phone really 100%?"

Baer is a freelance writer based in New York.

HOT TRENDS & TECHNOLOGIES IN BRIEF

WikiWikiWeb

BY JOY-LYN BLAKE

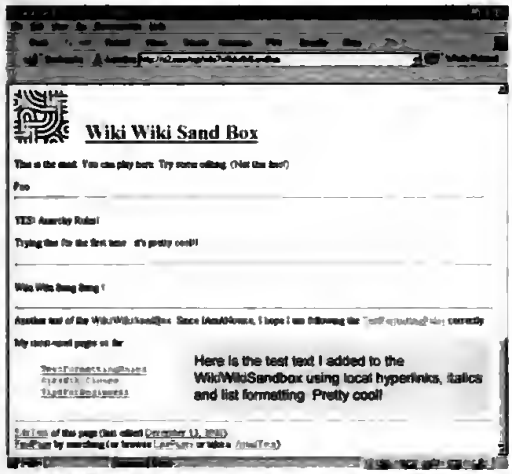
WEB SITE development can be an intimidating process to nonprogrammers. And collaboration with others can also be daunting, requiring expensive server-based applications. But it doesn't have to be that way. A technology with the strange-sounding name WikiWikiWeb (or just WikiWeb) simplifies both processes.

Created in 1994 by Ward Cunningham, WikiWeb was loosely derived from HyperCard principles and is written in a language called HyperPerl. The guiding principle behind the original Web site of Kansas City, Mo.-based WikiWeb Inc. (*www.wikiweb.com*) is that anyone can change or add to anything on a Wiki site at any time via an ordinary browser interface, making it an ideal collaborative environment.

Wiki provides an easy way to navigate files in a database. The technology is a stable platform that allows for adaptation or cloning to suit individual requirements. Wiki sites have been created using several development tools and languages. The *www.Kehei.com* WikiWeb is Perl-based; a clone written by Patrick Mueller was created in Rexx; and there are also Wiki engines in Python, Java, Smalltalk, Active Server Pages, Ruby, PHP and Visual Basic. Many clones have been created to support corporate or departmental intranets.

DEFINITION

WikiWikiWeb is a collaborative, Web-based environment where a group of specifically authorized editors — which can include any site visitor — can create, update, add and edit content. The platform also enables online discussions in a creative environment. *Wiki wiki* is Hawaiian for "quick."



THE WIKI WIKI SAND BOX lets you explore this collaborative platform, on which users can change or add to the site via a browser interface.

Why Wiki?

The main benefit of using Wiki is that it's not necessary for all changes to be submitted to a single intranet manager or webmaster. Those who use the site can keep it up-to-date on the fly. One implementation involves a customer support site for IBM's Component Broker product. Because pages are generated dynamically, the most current version of the file is always being served and links are automatically updated. Dynamic page-loading increases server load, but the Apache Web server with the mod_perl programming module can simultaneously support up to several hundred users.

The original Wiki site stores all pages together in one file using the Unix dbm hashed-access method. The Wiki translator accesses the database as it formats each hyperlink, which — according to the dbm documentation — can be done in two disk reads or fewer. The flexibility of this technology lets it sit on top of other databases such as Oracle, Access, Mini SQL and Revision Control System.

Wiki's formatting procedures aren't WYSIWYG, nor are they particularly intuitive. But the editing and creation commands are easy enough to master with minimal study, and they're brief enough to keep open in a second browser window for quick reference.

The basic text-formatting rules are simple:

- Don't indent paragraphs.
- Words wrap and fill spaces as needed.
- Use blank lines as separators.
- Four or more hyphens at the beginning of a line make a horizontal rule.

You'd never guess some commands: Use doubled single quotes ('') for emphasis (usually italics), tripled single quotes (''') for strong emphasis (usually bold) and six single quotes (''''''') to separate names that would otherwise appear to Wiki as page names but aren't. For example, QuickStudy, the name of this tutorial, would be input as Quick''''''Study to avoid being coded as a hyperlink.

Linking Made Easy

Creating hyperlinks to local pages is as simple as joining capitalized words together; if there were a page on the topic, its name would appear as JoinCapitalizedWords. Since page names are the hyperlinks between documents, it's important to assign names that clearly indicate a page's content.

Creating new pages is simple. Following the Wiki naming convention (using joined capitalized words as page names), include a link to your new page in any other page. When you save the page, a link will be generated that ends in a question mark. Clicking on the question mark opens the link's edit window. Type or paste in text, save, and you're done.

I was able to easily add my own test file (see the screen image at left) to the Wiki Wiki Sand Box, which is an area of the site where users are free to experiment.

In the piece I added, there are two hyperlinks to local pages: *WikiWikiSandBox* and *TextFormattingRules*. The word *test* was italicized by using the emphasis rule, while *WikiWikiSandBox* uses both the strong emphasis rule and the local hyperlink rule. The most-used-pages links were created with the list rules. For these, I had to use the Alt key plus 0-0-9 in place of the Tab key, which didn't work in the edit window.

The original Wiki markup language doesn't incorporate an HTML subset, although some clones have included one. The logic behind its omission is that using raw HTML would mean losing too much control over the content presentation. Since HTML hardwires the syntax and features, a single small error can break an entire page; also, full HTML allows users to exploit browser security holes.

Because pages are automatically indexed by their assigned category (a term used interchangeably with "topic" in the Wiki world), site maintenance is considerably reduced.

As a former intranet manager, I would have loved to have been able to delegate site updates through such an easy-to-use tool. Anyone responsible for maintaining a Web site or who has manually updated hard-coded links in flat HTML pages would appreciate Wiki.

Blake is a freelance writer in Dover, N.H.

Wiki Sites

- **LilyPond**, a music software site, is using Wiki for its online documentation. *http://appel.lilypond.org/wiki/index.php?LilyPond*
- For Tcl enthusiasts, there's **The Tel'ers Wiki**. This is a collaboratively edited area on the Web dedicated to the Tcl programming language and its extensions. *http://mini.net/cgi-bin/wikit/*
- **The JOS Project** is a collaborative undertaking by an international group of Java programmers and enthusiasts that's aimed at the creation of a free and open Java-based operating system (JOS). This site's goal is to support the creation of membership lists, hold brainstorming sessions and provide requirement documents, detailed specifications, sample code and other documents essential to the JOS Project. *www.metamech.com/wiki/view/Main/AboutWiki*
- Also check out the WikiWeb hosting site (*www.wikiweb.com*) to see the variety of Wiki sites being used on the Web, from Java information (*www.wikiweb.com/~TheJavaWiki*) to vegetarian recipes (*www.wikiweb.com/~VegetarianRecipes*).

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.

Start-up Speeds Procurement Process

Webango's services automate creation of RFPs and bid management

BY AMY HELEN JOHNSON

EASTMAN CHEMICAL Co., a Kingsport, Tenn.-based manufacturer of chemicals, fibers and plastics, has aggressive goals for procurement of indirect goods and services (those not used in the production supply chain): It wants to cut costs by $30 million worldwide and make the process faster and easier.

Debbie Davis-Waltermire, director of worldwide indirect materials and services at Eastman, says she can achieve those goals using the Webango Network, a procurement system hosted by Webango Inc. in Santa Clara, Calif.

The service's Web-based tools include forms for creating requests for proposals (RFP), a system for routing bid requests to suppliers and analysis tools for reviewing the bids. Vendors reply to requests on the Webango Network, so bids are presented in a consistent format.

According to Davis-Waltermire, Eastman Chemical has completed two contracts using Webango in the three months since it adopted the service, and it expects that 90% of its North American contracts for indirect goods will come through the Webango Network by year's end. Using Webango, Eastman can complete the procurement process in half the time it used to take, she says.

Casting a Wider Net

By automating the request-for-information and RFP processes, Webango has allowed Eastman Chemical to broaden the number of suppliers it asks to bid on contracts, says Davis-Waltermire. The company's previous method of handling bids involved shuffling paper bids and typing contract particulars into spreadsheets for analysis. That greatly limited the number of bids Eastman wanted to deal with, she says.

Now, she adds, storing specifications and bids electronically from start to finish reduces paper handling and eases the process of ranking bids. "Webango enables us to assimilate a lot of information from more people than we could do in the past. And far more quickly than we could in the past," Davis-Waltermire says.

Pierre Mitchell, an analyst at Boston-based AMR Research Inc., says Eastman isn't alone in evaluating suppliers and their bids by spreadsheet. Even companies that are savvy about sourcing and understand their business processes end up resorting to typing bid information into spreadsheets to figure out the best offer.

Every company hunts for suppliers, but not all companies will get maximum benefit out of Webango, says Mitchell. The best candidates are large, decentralized organizations with heavy indirect and direct procurement needs.

Gaps Remain

Webango has places to improve, Mitchell says. For example, he says, it doesn't assist with the identification of potential suppliers, its analysis tools could be extended and it does little to help with contract management once a bid is selected. Moreover, its customer list is small.

It could also go further with contract management and fill a large hole left by operational systems, like financial and enterprise resource planning applications, that support only basic terms and conditions of payment. And it could offer the ability to analyze existing spending by partnering with an established analytics vendor, such as ShareMax Inc. in Parsippany, N.J., says Mitchell.

Davis-Waltermire says she too would like to see Webango add a contract management tool. She says she also would like to see supplier-performance histories that describe other customers' experiences in areas like quality of goods and on-time delivery.

Rami Goraly, Webango's CEO, says such a benchmarking tool will be available in the second half of the year. The addition of that feature is among the goals included in a two-year product road map that's aimed at filling some holes.

The company also plans to address the fact that the Webango Network won't integrate with customers' back-end systems. Webango plans to partner with a business-to-business enterprise application integration vendor that will provide hooks between the Webango Network and back-end systems from vendors such as London-based Invensys PLC, SAP AG and Pleasanton, Calif.-based Peoplesoft Inc. That functionality will come in the first half of the year, says Goraly. ▶

Johnson is a Computerworld contributing writer in Seattle.

CEO RAMI GORALY says Webango has a two-year road map for adding new features to the Webango Network.

Webango Inc.

Location: 3508 Bassett St., Santa Clara, Calif. 95054

Telephone: (408) 562-9925

Web: *www.webango.com*

The technology: Automated RFP-creation and bid-management system

Why it's worth watching: Its service speeds the procurement process, saving time and cutting costs.

Company officers:
- Rami Goraly, CEO and co-founder
- Eytan Ben-Meir, chief technology officer and co-founder
- Eva Mineva, vice president of marketing and co-founder

Milestones:
- 1998: Company founded
- June 2000: First-round venture funding
- Sept. 2000: Webango network debuts

Employees: 86; growth rate of 500% per year projected

Burn money: $22 million from Battery Ventures, Concord Ventures and Redwood Venture Partners

Services/pricing: Webango Network; $250,000 per year

Customers: Eastman Chemical, Cisco Systems Inc., e-Cement.com

Partners: Anklesaria Group Inc., Emergent Information Technologies Inc., Exodus Communications Inc., BEA Systems Inc.

Red flags for IT:
- Webango may face competition from established e-commerce exchanges and supply-chain tool vendors.
- The service doesn't help identify suppliers, and its ability to manage contracts is limited.
- The service's cost makes it best suited to large, decentralized organizations that spend high amounts on procurement.

COMPUTERWORLD emerging companies

[the buzz STATE OF THE MARKET]

Niche Service Matches a Need

Webango's offerings are part of the larger strategic sourcing market, which encompasses products and services designed to optimize the selection and management of suppliers for the supply chain and general operations, says Pierre Mitchell, an analyst at AMR Research.

According to Mitchell, Webango has found a niche with great value to users: streamlining the creation of RFPs and the analysis of bids. Negotiated contracts that require RFPs account for half of all procurements, Mitchell says. Corporations can potentially benefit by saving on internal procurement costs, having better relationships with suppliers and paying lower prices for goods and services, he says.

Many of the larger online-exchange and supply-chain infrastructure vendors don't have such products, says Mitchell, but he notes that major vendors like Dallas-based i2 Technologies Inc. are likely to start adding such front-end services soon.

Webango may also face competition from e-commerce exchanges that want to extend their services. Finally, some supply-chain analytics companies, such as Palo Alto, Calif.-based SeeCommerce, are potential rivals, Mitchell says. But for now, Webango's strongest competition will come from other start-ups, including the following:

MindFlow Technologies Inc.

Plano, Texas
www.mindflow.com

MindFlow's ProcureMind e-procurement service provides the up-front process and methodologies for supplier selection but isn't strong in bid analysis and contract management.

Healy Hudson AG

Munich, Germany
www.healyhudson.com

This vendor offers a similar range of services in Europe and is beginning to offer its services in the U.S.

ShareMax Inc.

Parsippany, N.J.
www.sharemax.com

ShareMax's Sourcing Management System suite also has request-for-quotes workflow features, but recent layoffs might be an indicator that the company is having financial problems, says Mitchell.

– Amy Helen Johnson

The Failings Of Distance Learning

Web-based training may be cheap and simple, but most IT pros lack either the self-discipline or the learning style that makes it effective for many technology training needs. By Michelle Bates Deakin

LATE LAST YEAR, crime-scene tape was strung across 14 cubicles at Sprint Corp.'s offices in Mansfield, Ohio. It wasn't the aftermath of evildoing. It was the start of virtual training for Windows 2000 Professional.

"Do not disturb" signs and candy bars were strewn about, and the smell of popcorn filled the air. The props had one aim: to give employees the sense that they were in a classroom together, rather than sitting alone in a cube, staring at a computer screen.

> In distance learning, you're not really running the actual software. You're just clicking through screens.
>
> JAMES WELCH, NETWORK CONSULTANT, TEXAS MOTOR SPEEDWAY

From 3 p.m. to 6 p.m. twice a week for three weeks, the Sprint crew tuned in to a Web site for a live, instructor-led distance-learning class. Technical engineer Rick Toomey describes the instructor as a "top-40 disc jockey," who employed sound effects, humor and music to keep students tuned in. "He was clearly trying to offset our tendency to wander," Toomey says.

Toomey, a former middle school teacher, says he vastly prefers classroom learning; however, he acknowledges that the virtual classroom was a "good compromise" to reduce the expense of a classrom setting. The biggest deficiency of online training, he says, was the potential for interruptions by e-mail pop-ups.

"A PC is, by definition, a multitasking instrument," says Toomey. "You have a tendency to do more than one thing when you're sitting in front of it. It takes a certain kind of discipline."

Whether they have that kind of discipline or not, increasing numbers of IT workers are finding themselves face-to-screen with online instructors, as electronic-training is starting to cut into traditional classroom time.

Like other IT professionals who have tinkered with distance learning, Toomey has learned its limits. Distance learning may be well suited to some entry-level technologies, but more advanced training and hands-on labs still work best in a classroom, according to IT managers and students.

Sometimes, that's because simulations work better on dedicated PCs. And sometimes, it's just more engaging to be in a room full of people taught by a live person who can answer questions immediately and respond to nonverbal cues such as a sea of puzzled faces.

Measuring Results

Despite the deficiencies that Toomey describes, many consider the type of highly structured, live training that his team underwent to be the best kind of distance education. Other options include live Web lectures and go-at-your-own-pace tutorials. However, self-paced tutorials often leave employees to their own devices, and, without significant oversight, it can be very hard to measure results.

Kimberly Ivey, education manager at Irving, Texas-based Buchanan Associates, helped establish the online continuing education division at the systems integration company. But even with the division, called Buchanan Associates University (BAU), the 500-employee company hasn't replaced instructor-led training. "There are people who learn better in an instructor-led environment," says Ivey. "BAU works best for people who are independent and self-motivated."

James Welch is one such dedicated BAU student. Welch is a network consultant who reports for work each day at the Texas Motor Speedway in Fort Worth, where he oversees the racetrack's 100-PC network. Welch logs on to BAU through Buchanan's intranet to take classes toward his Novell certification. Personal commitments, including the recent birth of his son, have made classroom training inconvenient for him, so Welch now logs on during his lunch hour or after work.

"I prefer the quality of classroom sessions," says Welch. "The interaction helps you soak the material in a little better, a little faster."

Welch says he also misses the computer simulations that classrooms allow. "In distance learning, you're not really running the actual software," he says. "You're just clicking through screens."

David B. Lovins, vice president and IT director at The Warren Group, a Boston-based publishing and information-services company, made a brief foray into distance learning. He says he's not rushing back.

"I don't think the tools are there right now," Lovins says. After perusing several courses, he observed that many of the beginner and advanced courses were adequate, but the so-called advanced courses were really intermediate. "I don't think the interaction is there yet for people to be full-fledged programmers when they're finished," he says.

Lovins tried an à la carte approach when his company subscribed to an online university that granted employees unlimited access to online courses. The company's investment was minimal — it got the package as a premium when it bought new PCs. Nevertheless, no one on his five-person IT staff completed a course.

"The staff didn't feel they had the time, so none of them took the initiative to do it," Lovins says. In the future, he adds, he'll build much more management time into the online learning process.

"You have to structure it," Lovins says, advocating that managers set aside specific blocks of time during the workday for staff to devote to distance learning. Ideally, that time should be spent in a designated area, away from the phone calls and e-mail that inundate workers in their cubes.

Deakin is a freelance writer in Arlington, Mass.

GOING THE DISTANCE

The following can help make distance learning more effective:

Go for glitz. Bells, whistles, music and silliness keep students' attention from wandering.

Go "live." If there's a choice between instructor-led, live training and prerecorded sessions, pick the live version. It's more engaging and immediate.

Make sure it's interactive. There should be a forum for questioning the instructor and chatting with other students, and there should be frequent quizzes and simulations. Avoid packages that are merely a book on a screen.

Get follow-up materials. Be sure reference materials are included, and make sure there's a way for students to have their questions answered after the course is over.

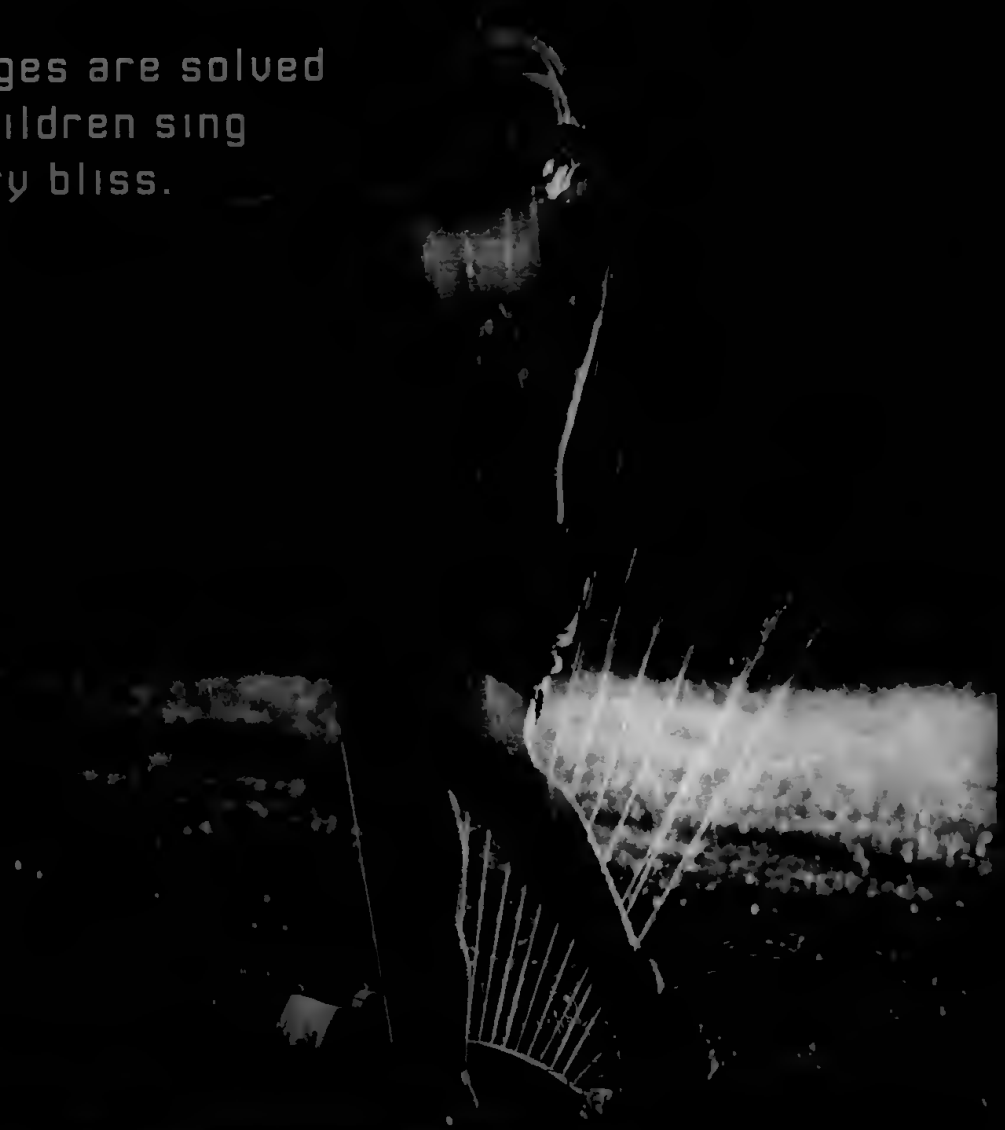
Customize it. Some vendors allow companies to integrate education packages into company intranets. That makes it easier for employees to log on, and it's easier to present classes as a company perk.

Schedule it. Only the most self-motivated employees will take courses on their own time, at their own initiative. Schedule a time during the workday for online education. Treat training as a meeting, and don't allow interruptions.

Do not disturb. Instruct staff to turn off e-mail and pagers while class is in session. That may require arranging for coverage. Hang a "Do not disturb" sign on students' work areas, or set up a designated area in the office for distance learning.

— Michelle Bates Deakin

Where challenges are solved
in code and children sing
songs of binary bliss.



[illegible]
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Birlasoft, Inc. 2035 Lincoln Hgwy, Edison NJ 08817; Fax resume (732) 287-5559.

Programmer/Analyst, Des Moines, Iowa - Bachelor's Degree in Computer Science. Min 3 yr experience in analysis, design implementation of large database system for ERP/Finance application using Oracle, Sybase, Pro*C, SQL Forms, Report Writer, data warehouse tools, planning, organizing and supervising group of programmers and manage project. 40 hrs per week, $65K per year. Must provide proof of legal authority to work permanently in US. Send resume to: Iowa Workforce Center, 215 Watson Powell Jr Way, Des Moines, IA 50309. Please refer to job order IA1101162. Employer paid advertisement.

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IT CAREERS IN NETWORKING/LINUX

At the very base of web-enabled computing, the Internet and all the functionalities of e-business is the network on which it all resides. That's why finding the best talent possible in networking is critical to the continuous evolution of research, the new economy and the way we transfer voice, data, knowledge and information.

Fermilab
Batavia, IL

The IT professional who is intrigued by science and discovery can find a niche with an organization such as Fermilab. The government sub-contractor, run by the University Research Association through the Department of Energy, studies and researches the fundamentals of matter and energy. "Our primary research concerns colliding particles with the highest energy particle accelerator in the world," explains Beth Verbeck, Fermilab employment manager. "The results of the collisions are recorded as events, and it's our task to transform event data into physics results using massive computing systems."

Verbeck stresses that Fermilab is a nonprofit organization, devoted strictly to research. "It's very fascinating work, and rather than working to a bottomline profit goal, our goal is making our dollars work to support research," she says. "The work itself is very challenging because you are supporting scientists, who are finding answers to earth-shattering questions."

"Here your customers are approximately 2,500 scientists around the world, as well as other labs with whom we collaborate," Verbeck says. "This really gives our work an international flavor, and, therefore, the computing has an international aspect. We are churning out scientific findings, not profits. You are able to do what you love to do when it comes to computing."

Fermilab has a variety of positions open. "In an academic research environment, we're looking for technical skills first and foremost, followed by problem-solving ability and a desire to learn," she adds. Specifically, Verbeck needs IT professionals with skills in Oracle, database administration, networking administration, LINUX programming, Internet security development and architecture, C/C++ programming and desktop support. "We look on resumes for examples of your having proven you are a learner; that you've adapted to new IT environments and that you have the ability to work in small teams, taking on a large part of the responsibility."

Genuity
Cambridge, MA

If you're looking to work at the premier backbone of the Internet industry, Genuity claims the role. The company provides its Internet networking solutions to such Internet monuments as Yahoo, Earthlink and AOL. Most recently the company inked deals for its new Black Rocket network services platform with New York Life, BankFirst and BBA Aviation.

Black Rocket is a turnkey networking solution that can be assembled in 10 days for customers. "It's a whole new way of looking at the needs of large businesses throughout the world with regard to their e-business presence," explains Carolyn Churcher, director of employment. "We provide internet access, data transport, managed web hosting and security in a single product."

When considering Genuity, it's important to know the company's rich history in leading-edge technology. Founded in the 1940s as BBN, the company conducted electronics research and development focused on acoustics. By the late 1960s, the company was heavily involved with Massachusetts Institute of Technology and the federal government in developing the first Internet – ARPANet. "We were the first Tier 1 Internet backbone company in the world," says Churcher. GTE purchased BBN in 1997 and became known as GTE Internetworking. When GTE and Bell Atlantic formed Verizon, the new company was required to split off this piece of the business, creating Genuity in June 2000.

"We have 1,000 positions to fill in 2001," Churcher says. "The positions include everything from entry-level technical customer support to systems administrators, network engineers and software engineers. The majority of the positions are in the Northeast, but we do have openings on the West Coast and at data centers located throughout the United States. We also are expanding our global presence and are recruiting in Europe.

"Primarily we look for well-rounded individuals with a combination of leadership and business skills, as well as technical skills with UNIX, NT, software and network engineering and development."

Churcher says that while the tremendous growth potential is an obvious plus for working at Genuity, so too is cutting-edge technology and training. "We're not a newcomer," Churcher adds. "We have a history with the Internet, and we intend to remain at the top of this business. That's exciting. We also offer an excellent quality of life/work balance."

Sprint
Overland Park, KS

There was a time when the Sprint network provided long distance service. Today the network has expanded and morphed into something entirely new – a system that can integrate voice and data for landline service, wireless service, and in tandem with other delivery partners.

"This is a whole new way of approaching the market so it demands an entirely new infrastructure," says Ric Walter, Sprint's assistant vice president for human resources. "So in addition to the service delivery systems, we have new billing systems, programming, management systems for running networks and an ever-increasing need to deploy multiple ways for people to access networks."

Walter says the company continues to explore ways to expand the Internet backbone. "Right now we are #2 in the industry and we want to be #1," he says. "There's a lot of energy behind that effort." To power progress, Sprint announced ION, its Integrated On Demand networking capability, in June 1998 and continues to roll it out in 2001.

Sprint hires approximately 3,000 IT professionals every year, both experienced and new college graduates. "The positions range from technicians through scientists," Walter says. "We look for all the right buzz words in terms of current languages and leading-edge applications, as well as a clear understanding of networking and experience related to communications. We keep in mind that the term communications is a blur of many technologies, and to us that means anytime, anyplace communication between people, people to machine, and machine to machine."

Walter says the company also hires for core competencies to assure that individuals can continue to grow with the company. "Among the top competencies is the ability for a person to work well with others and to treat others appropriately and with respect," he says. "We need people with strong communication skills, interpersonal skills and leadership skills." Openings are available at Sprint's major centers – Reston, Dallas, Atlanta and San Francisco – as well as at its major switch sites located across the country.

"We have a reputation for quality and for leading-edge challenges," Walter adds. "Emphasis is placed on your development and training. We want to provide you with what you need for your career – from diverse challenges to the way to meet them."

IT careers

For more job opportunities with Networking/LINUX firms, turn to the pages of ITcareers.

- **If you'd like to take part in an upcoming ITcareers feature, contact Janis Crowley, 650.312.0607 or janis_crowley@itcareers.net.**
- **Produced by Carole R. Holden**
- **Designed by Akkaboran Graphic Solutions**

For nearly 20 years, Syntel employees across North America, Europe, and Asia have helped build advanced information technology systems for leading Fortune 500 companies and government organizations to improve their efficiency and competitiveness. Today, Syntel professionals are building rewarding careers by providing solutions in e-business, CRM, Web Design and Data Warehousing.

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SYNTEL

www.syntelinc.com

Senior SAP Consultant position open to qualified candidates. Job duties will include performing surveys of clients' existing business models, operation, procedures and goals, and to guide clients in determining objectives and desired improvements to be realized through use and implementation of SAP Software (which may include Basis, Human Resources, Finance, Costing, Sales and Distribution and Material Management R/2 and R/3). The individual will advise clients on re-engineering business processes, determine possible system configurations and complete such customizations to ensure successful implementation. Duties will also include defining, writing, testing and implementing programs and customization code using knowledge of ABAP/4 programming language and development workbench, perform SAP upgrades and system for optimal performance, provide training and training materials post implementation support for successful knowledge transfer to end client personnel.

Qualified candidates will have a minimum of 4 years SAP consulting experience including at least one complete SAP implementation project with a minimum of two of the SAP Modules Finance, Costing, Material Management, Sales and Distribution of Human Resources and extensive ABAP programming skills. Salary: $100,000/year.

Qualified applicants should refer to Job Order No. S00018112 when submitting their resumes to the Sioux Falls, South Dakota Job Service at the following address:

South Dakota One-Stop Career Center
P.O. Box 5778
Sioux Falls, SD 57117-5778
Tel: 605/367-5300
Fax: 605/367-5308

Fermilab's preservation efforts have brought home to our grassland many native species of plants that weren't here when we moved in.

As we explore the nature of matter, so do we heed how much nature matters. We embrace the vast scheme of our universe, from the tiniest parts of nature — the worlds inside the atom — to worlds light years away. The ongoing quest to comprehend the fundamental nature and origin of matter and energy — to understand our place in the universe — makes Fermilab a vital, dynamic place.

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SOFTWARE DEVELOPMENT ENGINEERS

Works under close supervision and work is closely monitored performing design and development of software for domestic and international publishing industry, Internet applications, and/or relational database management systems in a client/server environment. Provides functional analysis related to design, development and implementation of software or multiple platforms using C/C++ programming languages in Windows and Macintosh environments. Codes, tests and debugs the applications, modules and/or graphic features. Requires B.S. or foreign equivalent or equivalent work experience and training in Computer Science, Engineering or related field. Two openings available. $40,000/year. Location of job: Denver, CO. 40 hour week. Application by resume to Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to job order number JL1116883.

Software Engineer. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Research, design and develop computer software systems in conjunction with hardware product development. Analyze software requirements to determine feasibility of design within time and cost constraints. Consult with clients to define needs or problems. Use of Visual C++, C++, Java, Windows NT and Rational Rose 98. Reqs. Master's in Computer Science, Computer Eng., or related field of study. Will accept a Bachelor's degree and 5 years of progressive experience in the job offered and/or related field in lieu of required education and experience. Plus 2 years in the job offered or 2 years in a related occupation including Programmer, Developer or Programmer Analyst. $86,058/year. 40hrs/wk, 8AM-5PM. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202 and refer to Job Order No. JL 1116933.

Senior Programmer/Analyst sought by company in Denver, CO specializing in business software solutions to work in Chicago, IL & other unanticipated job sites in the US. At a senior level, engage in full life-cycle software development of manufacturing & other types of Windows software applications &/or client/server & web-based applications. Analyze requirements. Chase designs & design documentation. Code, test & de-bug the software applications. Engage in project management as required. Use Visual C++, Visual BASIC, Microsoft Component Object Model (COM), Microsoft Foundation Classes (MFC) & Active Template Library (ATL) in the design & development process. Requires Master's in computer science, electrical engineering, or related field 1 year of full life-cycle Windows software development using MFC & Visual C++, working knowledge of manufacturing software applications & COM & AMF. 5 P.M. M-F. $72,700/year. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400 1515 Arapahoe, Denver, CO 80202 & refer to Job Order Number JL-1116913.

Software Engineer. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Research, design and develop computer software systems in conjunction with hardware product development. Analyze software requirements to determine feasibility of design within time and cost constraints. Consult with clients to define needs or problems. Use of FOXPRO, Dbase, Oracle 7.3, Powerbuilder and Developer. Reqs. Master's in Computer Science, Computer Eng., Business Administration or related field of study. Plus 2 years in the job offered or 2 years in a related occupation. Related experience must include designing and developing Accounting programs. $86,058/year. 40hrs/wk, 8AM-5:30PM. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Tower II #400, 1515 Arapahoe St., Denver, CO 80202 and refer to Job Order No. JL 1116932.

SOFTWARE ENGINEER

Chicago based computer consulting firm needs a Software Engineer. Must have BS or equiv + min 2 yrs exp in Cobol/MF & Systems Development. Perform following tasks & use following SW: Design, test UNIX/open system, DOS, MVS, CICS, OS/2, IBM AS 400 &/or other Databases, Cobol C, C++, Oracle & SQL. Relational Database-DB2, Transaction usage via UNIX/Clnt Srvr environment-develop & maintain applications (& program coding) and documentation. QC products & test plan, prep using ADW & tech documentation, including instruction manuals for establishment & functioning software apps. Applicants must show proof of legal authority to work in the U.S. Direct all applications To: IDES, 401 South State St., - 7 North, Chicago, IL 60605. Attn: Sheila Linday, Ref#V-IL 24242. LAN EMPLOYER PAID AD. No Calls-Send 2 copies of both resume & cover letter. EOE

Software Engineer. Design, develop, and implement software operating systems for clients (utility development, and diagnostic). Work on complex designs and coding systems in distributed network. Analyze software requirements to determine feasibility of design within time and cost constraints. Formulate and design software systems using scientific analysis and mathematical models. Develop and direct software testing procedures, programming and documentation. Consult with clients concerning maintenance of software systems. Plan and prepare technical reports and memoranda relative to the operation of the program in the system. Utilize Visual Basic, Visual C++ and Oracle. May require the relocation for extended periods of time at company expense to various client sites located in the US for periods ranging from 6 mos. up to 2 yrs to meet contractual obligations. 40 hrs/wk, 9am-5pm, $67,995.20/yr. Required Master's degree in Computer Science and 2 years experience in the job offered. Apply at the Texas Workforce Commission, Dallas, TX, or send resume to 1117 Trinity, Room 424T, Austin, TX 78701. JO# TX1025279. Ad paid by an Equal Opportunity Employer.

Sr Software Engineer

Manage and direct resources associated with the design, development, testing, implementation and maintenance of application software in a client/server environment using Baan, Baan PDM, MetrixOne, Oracle, Sabin, Candian, UnixOne, Operation SolidWorks and Centra. Supervise 3-4 systems programmers. Participate in long range planning of Information Technology initiatives that support strategic corporate goals. Analyze and advise on complex technical issues related to client/server support applications. Masters degree in Information Science, Computer Science or related field required. 8 yrs of programming experience and 3 yrs of systems design experience required. Baan Tools Certification and a minimum 5 yrs of experience with Baan & Oracle required. Applicant must also have experience working with Unix (AIX), SQL*Plus, PL/SQL, HTML, XML, VB, C/C++, JAVA, TCL/TK, MQL, and SolidWorks API. Hours are 7:30am – 4:15pm. This position will be on call and expected to work off prime shift when needed. Please forward your resume to:

Sue Nowakowski
Bucyrus International
1100 Milwaukee Ave
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Fax: 414-768-4134

Senior Programmer/Analyst (2 positions)– Plans, develops, tests and documents computer programs, applying knowledge of programming techniques and computer systems. Will perform routine tasks and will work under close supervision while assisting staff. Work is closely monitored and reviewed for accuracy. Requires Bachelor Degree in Computer Science, Engineering or Mathematics. 5 day, 40 hr/wk, $55,827/yr. Please mail resumes to Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to order number JL1116919.

Full-time Principal Engineer responsible for the allocation and assignment of Radio Planning work for Sr Consultants and RF consultants. Assist the VP with the preparation of contract documents and in the contract negotiation process using experience in the design and operation of digital cellular systems. Carry out design and modeling of the cellular networks, including radio coverage predictions, capacity and demographic analysis, morphological studies and database acquisition, market analysis, specification of features and services, signaling and interface requirements, and testing methodology. Must have a Bachelor's Degree in Communications Engineering or foreign degree equivalent. Must have two years in the job offered or two years the position with same duties. Salary $87,645/yr. Send resume to Chip Anderson, Logica Radio Planning, 3535 Travis Street, Suite 100, Dallas, TX 75204.

SYSTEMS ANALYST

Design, develop, maintain, enhance and modify systems, applications and programs. Analyze pertinent data information and modes of operation. Evaluate existing and proposed systems; translate comprehensive business requirements into detailed, functional specifications. Code and test and document systems solutions, write, test and debug programs, provide support in the implementation process, define system parameters. Prepare software/end-user documentation, provide training, and technical support and trouble-shoot software systems. Analyze user requirements, procedures and problems to automate processing or to improve existing computer system. Review computer system capabilities, workflow and scheduling limitations to determine if requested program or programs change is possible within existing system. Responsibilities include database maintenance, websites maintenance, data migration from SQL-Database to Calyx, Calyx to SQL Database, Web trends design and develop new websites, maintain existing websites. May prepare time and cost estimates for completing projects. Requires experience in relational data-bans environment: SQL Server, Oracle, MS-Access, Visual Basic, Crystal Reports, ADO, RDO, ASP, COM/DCOM, MTS, IIS, Active-X, PL/SQL Developer 2000, Windows NT Administration, SQL Server DBA and Oracle DBA required. Utilize SCO-UNIX, Windows NT/95/98, MSDOS and Novell Netware. A qualified applicant must have a Bachelor's Degree in Computer Science or Engineering plus 3 years progressive experience. Salary $75,000 per year. Submit Resume to LoanSurfer.com, attn: Jerry Fenstermaker, 326 South 21st Street, 5th Floor, St. Louis, MO 63103.

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Eatel, a provider of telephone and communication services, has multiple openings for qualified **Information Technology Professionals**. For consideration, please contact: Eatel, 913 South Burnside Ave., Gonzales, LA 70737-4258 Attn: Information Technology, Job Code 886 or call Trisha Guidroz, Phone (225) 631-4258. EEO AAP

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W/Exp. in one of the following: Peoplesoft-Financials (Billing, Project Costing, Budgeting, Asset Management, GL, AP) and HRMS Package, Object Oriented Design/Programming, Java, JavaScript, C++, HTML, PERL, Oracle, DB2, Windows NT, Unix. Apply to Object Designers Inc., 12374 Mackey, Overland Park, KS 66213.

Senior Software Engineer (multiple openings) Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work requires extensive travel and frequent relocation. Must have one year of experience in job offered or as a computer professional as well as one year of experience using BaaN Masters degree in Computer Science/Applications, Engineering, Chemistry, Math, Physics or a business related field. Will accept Bachelors degree with five years of progressive experience as computer professional. Salary is $105,000 per/yr. 40 hrs/wk. 9:00-5:00 p.m. Please submit resumes to: Mr. Terrance Kenney, Manager Armstrong County Team PA CareerLink, 1270 North Water Street, PO Box 759, Kittanning, PA 16201-0759. Reference Job Order No. WEB185900

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Hargray Communications - Hilton Head, a division of Hargray Communications Group, has an employment opportunity again for a Lead Oracle Developer Systems Analyst.

Candidates should possess a BA Degree in Computer Science/Engineering or equivalent. Minimum 3 years work experience in Oracle generation, collection, analysis, documentation and control of functional/system requirements in of complex Oracle-based information systems. Experience in promoting interaction between developers, clients and users.

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An Equal Opportunity Employer M/F/D/V

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Computer Analyst/Sr. Analyst
Will do one or more of the following, design, analyze study, review and computer code to meet the specific needs of our customers using one or more of the following: COBOL, CICS, JCL, IMS, and DB2 in a IBM MVS mainframe environment.

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Application Development Project Manager. Candidate will use knowledge of Multiple Virtual Storage (M.V.S.) and Enterprise Systems Architecture (E.S.A.) operating systems to manage and supervise the activities of LAN administrators, software analysts and database administrators analysts. Will assist in capacity and facilities planning, including the installation of large mainframe equipment. Will assist in training employees in systems and procedures for use of new equipment and new systems. Will schedule plan and organize computer resources to ensure management schedules are maintained.

Please send resume via email to i-structure.hr@i-structure.com, or by letter to Amy Ostrand, 13710 FNB Parkway, Suite 400, Omaha, NE 68154

Software Engineer- Global Telecommunications Specialist (Manhattan, NY) research, design, and develop computer applications, in conjunction with hardware product development for telecommunication industry, applying the most sophisticated techniques of computer science, engineering and mathematical models. Using C++, C and other object oriented computer languages, analyzes and designs database servers for a global network providing the technical intelligence and capability to interconnect company's based telephony switches around the world. Design and develop client/server software for PC based telephony switches used for communications using high density telephony boards such as: DM80SC-T1, D/240SC-T1 and others. Required Bachelor's degree in Computer Science or Systems Engineering and three years of experience in the job, salary $80,000 per year, M-F 9AM-5PM, please send resumes in duplicate to: SAM3990 Post Office Box 703, New York, NY 10014-0703

Compliya Tech Inc., has immediate multiple openings for expert IT professionals in the following areas: (A) Oracle 8, D2K 6.2 ft. SQR reports, Peoplesoft, OEM, OPS (B) Oracle LSX, ODBC, MTA, MFG-Pro, Lotus Script (C) Jaukiter, JAF, JDBC, JMAPI (D) ADR, VSFastGrid Pro 7.0, PWS, MTS, Visual InterDev6.0, (E) PB5.0 Ent. v., DWB, TSOL, Delphi, Hicks (F) JDeveloper, FastPro, NT, Unix Open Server (G) Oracle Net8, Oracle Names, Oracle DSS (H) ArcServeIT, Veritas, Veritas VM, CISCO 2500, 4000, PPP, ISP, Frame, DNS, WINS (I) JBorlant, ADO, Visual Interdev, SQLServer 7.0, MVS, Xpeditor (J) OEM Change Mgmt, FoxBase, Pro'C, Oracle RM (K) AS/400 Visualage Java, DB2/400, ILE/RPG, CL/400, Synon 2E (L) Oracle Appl/Fin v-10.7 SC, Lawson Fin Appl, HP/Unix Server, Oracle 8. Some positions require MS or equiv CS, Engg, Math, Bus, Admin, or rel. field while others require BS or equiv as above. Pay commensurate with exp. Foreign equiv of educ. and/or combination of educ/exp will be accepted. Travel/relocation reqd. Resumes & salary expectations to HR, 4244 Ridge Lea Rd. Ste. 3, Amherst, NY 14226

Borland. Out in Front. Go There With Us.

The power of the Internet, like a giant breaking wave, affects all business enterprise with dramatic force. Some are crushed in the undertow, some barely survive, but some thrive. Technology, the skill to use it, and sound strategy make all the difference. Borland is defining a new digital world to help ride the e-business wave.

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Computer Information Systems & Technology

Purdue University's Department of Computer Technology invites applications for two or more tenure-track, assistant professor positions at its West Lafayette home campus and various statewide outreach campuses, beginning in August 2001. The department's mission focuses primarily on teaching, educational scholarship (not basic or applied research) and industry/professional outreach. The West Lafayette positions exist in the areas of web-based and client/server system design and application development courses involving contemporary technologies, including SQL, Java, and XML. Other possible WL positions may be approved in applications programming (C++), telecommunications, and project management. West Lafayette candidates must participate in both undergraduate and graduate education assignments. Candidates for statewide outreach positions should be able to teach a variety of foundation courses in end-user computing, application programming, database systems analysis and design, and data communications. All candidates must have an earned Masters Degree in a relevant field (the doctorate is not a requirement for employment, promotion, or tenure for these positions). All candidates should have at least three years of full-time, relevant industrial experience in information systems and business computing. Prior teaching experience is also preferred. Applications will be accepted until the position is filled. Send a detailed resume and academic transcripts to CPT Search and Screen Committee, Ad Code CTR, Department of Computer Technology, Purdue University, 1421 Knoy Hall, 242 West Lafayette, IN 47907-1421. Questions should be directed to Professor Jeffrey L. Whitten (West Lafayette) at Phone (765) 494-4545, or on the Internet at jwhitten@tech.purdue.edu. Purdue University is an equal opportunity, affirmative action employer.

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E-MAIL

Our Web address is **www.computerworld.com.** All staff members can be reached via e-mail using the form: **firstname_lastname@computerworld.com.**

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CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

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Editorial Director Print/Online Patricia Keefe (508) 820-8183

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Matt Hamblen (508) 820-8567
Kathleen Melymuka (508) 628-4931
Kim S. Nash (773) 275-4133;
Mathew Schwartz (508) 820-8265;
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Java

Java for its .Net future.

"This is bad for Java and bad for Microsoft," said Michael Segal, chief technology officer at SimulConsult Inc., a maker of medical diagnostic tools in Brookline, Mass. "If Microsoft drops Java from [Internet Explorer], that's a huge concern because you won't be able to use applets. And if it's hard to run Java on IE or takes a technical person to use it, we'll switch to [supporting] Netscape."

Microsoft has already announced developer tools for converting applications developed in the old Visual J++ code to its .Net platform or C++ and C# languages (see related story, at right).

While some analysts said this conversion will present a problem for some companies, many users said they had stopped using J++ in the wake of the lawsuit. Microsoft hasn't updated the Java code in its products since Version 1.1.4; Sun now offers Version 1.3.

Perhaps the most pressing concern for IT developers is the use of Java in Microsoft's popular browser. The plans for Internet Explorer 6.0, now in beta, are up in the air. Tony Goodhew, a Microsoft product manager, said Internet Explorer 6.0 may offer the Java Virtual Machine as an "on-demand download" or substitute it with a .Net component.

The settlement with Sun also closes the door on upgrading Microsoft's tools, such as Visual J++, with enhancements from Sun's Java code. Yet many developers don't use J++ anymore anyway.

"We stopped using Visual J++ because of the lawsuit and the lack of support by them," said Sil Zendejas, a software developer at the Jet Propulsion Laboratory in Pasadena, Calif. "We were scared because they wouldn't support it and downplayed the existence of Java after a certain point." Zendejas said he plans to use C# and C++ instead.

Developers also shouldn't expect to see Java supported in Microsoft's .Net initiative, a middleware framework that allows applications to swap services over the Web. The settlement explicitly prohibits Java from cropping up in .Net.

"In deciding not to use compliant technology, [Microsoft has] decided to preclude licensing Java for .Net," said Rich Green, general manager of Java software at Sun.

Ultimately, those developers whose corporate environments are vested in Microsoft technology will have to wait for it to deliver .Net and the new C# development language, which it bills as a cross-platform alternative to Java.

"Its not any big secret that .Net is Microsoft's answer to Java," said Robb Eads, senior software engineer at Trilithic Inc., a maker of cable TV instruments in Indianapolis. "This early in the game, you really have to go on faith" that .Net will be cross-platform and an alternative to Java, he added.

Terms of the Suit

Sun settled its lawsuit against Microsoft but laid down strict terms:

- Sun grants **use of its Java Development Kit 1.1.4** "as-is" in existing products and in products in the testing phase until Jan. 2, 2008
- Microsoft is **restricted from making any modifications to code,** except to fix critical customer defects and security holes

Microsoft Tools Aid Migration

Microsoft last week unveiled a set of migration tools to move its Visual J++ applications off the Java platform. Called Java User Migration Path to Microsoft .Net (JUMP), the tools aim to convert applications developed in Visual J++ to Microsoft's .Net platform.

The tools can also be used to migrate existing Java code to C#, Microsoft's new object-oriented programming language. JUMP will also work with Visual Studio .Net.

According to Tony Goodhew, JUMP product manager, the tools will automatically convert 80% to 85% of the code in Visual J++ applications. "There is no reason to cripple .Net by going back and limiting it to [Java 2 Enterprise Edition] functionality," he said.

Beta versions are scheduled to be available by the summer.

JUMP provides a ready-made alternative for J++ developers, said Carl Zetie, an analyst at Giga Information Group Inc., in Cambridge, Mass.

"A lot depends on just how well this technology works and what proportion of J++ will go across to the .Net framework," Zetie said. "The amount that you need to change is an easier issue than figuring out what the changes need to be."

Some users expressed skepticism about the tools.

"We will convert our J++ code, but there are at least three different directions that we could go," said Bill Buckingham, an IT architect at Royal Bank of Canada in Montreal. Shifting to Sun's Java tools, migrating to .Net or looking for a third-party development environment are all viable options, he said.

"For new developments, I'd still prefer to use Java, as it's a solid language and [virtual machine]. And for server-side development, it takes a lot of beating," said Patrick Lambe, head of IT operations at RiskBox.com Ltd., a financial services firm in London.

Pricing for JUMP hasn't been determined.

– Lee Copeland

Continued from page 1

Intelligence

"I referred many times [in the report] to the fact that European countries ran satellite [signal intelligence] systems to collect intelligence," Duncan Campbell, the author of the report, told *Computerworld*.

France and Germany are also known to employ modern technologies designed to collect economic intelligence that would help firms in those countries. Europeans are "open-minded and readily accept that our companies and governments — like [the U.S.]" spy, bribe and cheat on occasions, Campbell said. "The European inquiry is going ahead on that basis."

In his study, Campbell accused Lexington, Mass.-based Raytheon Co. of receiving information from Echelon that allowed it to outbid two French firms in 1994 for a $1.4 billion contract with the Brazilian government for a system to monitor any environmental changes in the rain forests there. A Raytheon official called the charges groundless.

"Raytheon won the [contract] because it had the best technical solution and the lowest price and best financial proposal," a company spokesman said.

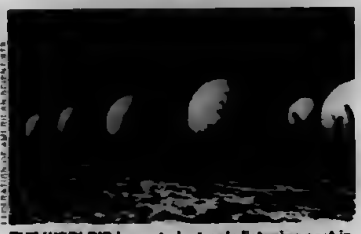
Neil MacCormick, a vice chairman of the European Parliament's special commission on Echelon, called Campbell's testimony sober and balanced. The use of Echelon, particularly its Advocacy Center, which helps U.S. businesses overcome unfair trading practices, is well documented, said MacCormick.

"It therefore follows that some of the output of Echelon is used in contexts of economic intelligence affecting the interests of non-U.S. businesses," he said.

"Many European nations should look into the mirror before complaining about economic espionage by other nations," said Cees Wiebes, a professor at the University of Amsterdam who testified last week before the parliament of the Netherlands.

According to Wiebes, many Dutch multinationals — including Philips Electronics NV and Royal Dutch/Shell Group — have received intelligence gathered by the Dutch equivalent of the U.S. National Security Agency (NSA) to support construction projects at airports and seaports.

But U.S. intelligence officials insisted that Echelon isn't used to covertly assist U.S. companies in their efforts to win contracts around the world. They said Echelon is used to uncover international fraud schemes, criminal activity and terrorist groups.



THE WORLD'S largest electronic listening post in Menwith Hill, U.K., is allegedly an Echelon hub.

A spokesman for the NSA, which manages the Echelon network, said the agency operates in strict accordance with U.S. laws that prohibit the agency from providing "intelligence information to private firms for their economic advantage."

A former CIA official familiar with NSA operations who spoke on the condition of anonymity said he finds the claims of assistance to U.S. firms by the NSA hard to believe — except in cases involving specific military technologies. Campbell and the European Union are "overplaying the economic espionage aspect of Echelon," he said.

Executives in the U.S. also discounted claims made during an European Parliament hearing last November that U.S.-produced software such as Microsoft Corp.'s Windows operating system contains back doors that support Echelon activities.

Steve Lipner, manager of Microsoft's Security Response Center, said the best example of Microsoft's position on Echelon and of not allowing back doors to be implanted in its software is evident in its opposition to legislation that would require companies to share encryption keys with federal law enforcement.

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FRANK HAYES/FRANKLY SPEAKING

IT: Nifty at 50?

FIFTY YEARS. HARD TO BELIEVE, isn't it? Fifty years ago this month, Arthur Andersen consultants decided to create the first computer consulting business, effectively inventing commercial IT. In February 1951, Ferranti Ltd. in England completed the first commercial computer. The next month, Remington Rand finished building its first Univac I. And by the end of the year, London food-service firm J. Lyons and Co. installed the first computer used for business data processing — running payroll, managing inventory and working commercial calculations.

And 50 years later, what do we have to show for it?

Well, we've got hardware and software — a gargantuan pile of hardware and software. Millions of tons of computers. Trillions of lines of code. And that's just the stuff we're still using today. The technology trash heap is even bigger.

More than that, though, we've got knowledge — a hard-won understanding of how IT really works.

For software, Brooks' Law tells us that adding people to a late project makes it later. Linus' Law says that adding enough debuggers to a project will speed it up dramatically.

On the hardware side, Moore's Law says processors double in power every 18 to 24 months. And according to Metcalfe's Law, networks grow in value by the square of the number of their users.

And where IT meets business, there are some other lessons we've learned, too.

■ **Automation can do only so much.** When users' brains control the machines, they're immensely more powerful.

■ **Hardware keeps getting cheaper. Software keeps getting more expensive.** The cheapest way to speed up the machine is with faster hardware. But the only way to make it more effective is with better software.

■ **Computing power isn't measured in MIPS.** It's measured in dollars saved, sales gained and user effectiveness improved.

■ **Garbage in still produces garbage out.**

■ **Even the best IT idea doesn't stand a chance against corporate politics.** But corporate politics are no match for the ingenuity of users. From PCs to the Internet to wireless handhelds, users *will* drag business kicking and screaming into the future — which means users, not the IT shop, are the most powerful proponents of IT.

■ **We can build systems quickly or big or right – but not all three.** If we build them quickly, they're bound to be small or wrong. If we build them big, they'll either be late or wrong. And for *really* big systems, they're guaranteed to be late *and* wrong.

■ **No matter how much information matters to business, it's still not what most businesses produce.** Like the TV ad says, IT doesn't make the airplanes and toys and food and cars and dishwashers — it just makes them better.

■ **Work expands to fill the bandwidth provided – and the storage provided, and the processor cycles provided.** Yesterday's "plenty enough" is today's "barely sufficient" and tomorrow's "hopelessly inadequate."

■ **Prediction is futile – and unavoidably necessary.** We have to plan, but we'll always get it wrong. That's because technology may advance along a straight line on semilog graph paper, but what people will do with it goes in all directions — a zigzag, a tight curve, a widening spiral — and then jumps off the page.

■ **Users save us from our most catastrophic stupidities.** They always have, despite bugs, delays and bad ideas. They compensate; they work around; they adjust, no matter how big a mess IT creates. After 50 years, they're still the only ones who can. ▶

After 50 years of business IT, we've learned some hard-won lessons.

Hayes, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

SHARK TANK

CONTRACTOR WEB pilot fish working on a military base gets a call from a military unit commander. Why isn't my biography on the unit's intranet page? he demands. Fish scours the unit's files looking for the bio to add but can't turn it up anywhere. She finally calls the brass hat back and asks, "OK, where can I get a copy of your bio?" Brass answers, "I don't have one."

THE INFO THIS pilot fish needs is in the fax from the vendor, all right – but it's impossible to read. Fish calls the vendor rep and points out that the data he needs is covered up by a Post-it-note-size block that says, "Here's the info you needed." Replies the vendor rep: "Well, can't you just lift up the Post-it note?"

THE REASON WHY Boss lays into IT pilot fish because new employee "started yesterday and *still* can't log on to the network." Fish checks to make sure the employee is in the system, then sends a junior staffer down to the user's computer to see the problem in action. Junior reports back: "New employee is sitting at a dark monitor . . . and the computer isn't even turned on."

EIGHT THE HARD WAY During a routine backup, sysadmin pilot fish notices that an 8mm tape drive isn't working properly. No big deal – the drive's still under warranty, and the vendor promises to ship a replacement ASAP. But there's not a spare 8mm drive, so the fish mentions it to her supervisor. His response: "Couldn't you use two of the 4mm tape drives? We have several of those."

Yeah, Sharky knows that pilot fish last week meant IBM 3480 tape cartridges – and not 3,480 tape cartridges. That would have been some big pile of tape. Send me a big pile of mail: **sharky@computerworld.com**. You get a sharp Shark shirt if your true IT tale sees print – or if it shows up in the daily feed on the Web at *computerworld.com/sharky*.

The 5th Wave

"Drive carefully, remember your lunch, and always make a backup of your directory tree before modifying your hard disk partition file."

E-mail richardson@thefifthwave.com

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THE *MERGED* COMPANY ISN'T BIG ENOUGH FOR TWO CIOs.

One guy gets a six-figure severance package.
The other guy gets a coach seat to nine time zones
and a two-word mission from the chief: fix it.
The "synergy" that was supposed to happen
with the merged companies didn't.
The operating units can't share data.
The employees work together fine;
the data storage systems don't.
It's too bad you can't take
storage systems offsite to bond.

>> storage fact The average large company has six different computing environments, making consolidation a problem. Open IBM storage solutions, including Enterprise Storage Server™ and SAN, work with the systems of all leading vendors to streamline data retrieval. Storage matters. In the new economy, you're only as good as your infrastructure.

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